NOTICE OF PUBLIC HEARING, COMMENT PERIOD

The Arkansas Department of Environmental Quality (ADEQ) will hold a public hearing March 1, 2016 at 2 p.m. (Central Time). to receive comments on the proposed 2016 Impaired Waterbodies List (commonly called the 303(d) List). The hearing will be held in the Commission Room at the ADEQ Headquarters Building; 5301 Northshore Drive, North Little Rock. ADEQ will accept written comments on the proposal until March 11, 2016 at 4:30 p.m. (Central Time).

In the event of inclement weather or other unforeseen circumstances, a decision may be made to postpone the hearing. If the hearing is postponed and rescheduled, a new legal notice will be published to announce the details of the new hearing date and comment period.

ADEQ develops the 303(d) List every two years under provisions of Section 303(d) of the Federal Clean Water Act. ADEQ assesses water quality monitoring data from numerous locations around the state based upon a comprehensive assessment methodology to determine which waters are not meeting their water quality standards and/or designated uses as listed in the Arkansas Water Quality Standards (Regulation 2 of the Arkansas Pollution Control and Ecology Commission).

Water quality data from stream and lake sampling sites were considered during the development of the proposed 2016 303(d) List. The evaluated water quality data were collected by multiple entities including ADEQ; other state, federal, and local government agencies; and private entities in Arkansas and from surrounding states.

Copies of the list and maps of listed waters by county are available on the ADEQ's website at: http://www2.adeq.state.ar.us/water/branch_planning/303d/303d.htm or can be obtained by contacting Jim Wise in the ADEQ Water Division; telephone, 501-682-0663; E-mail, wise@adeq.state.ar.us. A complete listing of impaired waterbodies and the reasons for impairment can be found in the tables following the narrative of the draft 303(d) List.

Copies of the proposed 2016 Arkansas 303(d) List also are available for public inspection during normal business hours at the ADEQ's Public Outreach and Assistance Division, located on the second floor of the ADEQ headquarters building, 5301 Northshore Drive, North Little Rock. In addition, copies of the list are available for public review during normal business hours at ADEQ information depositories located in public libraries at Arkadelphia Batesville, Blytheville, Camden, Clinton, Crossett, El Dorado, Fayetteville, Forrest City, Fort Smith, Harrison, Helena, Hope, Hot Springs, Jonesboro, Little Rock (main branch), Magnolia, Mena, Monticello, Mountain Home, Pocahontas, Russellville, Searcy, Stuttgart, Texarkana, and West Memphis; in campus libraries at the University of Arkansas at Pine Bluff and the University of Central Arkansas at Conway; and in the Arkansas State Library, 900 W. Capitol, Suite 100, Little Rock.

At the hearing, Water Division staff will present a short program discussing the proposed 2016 303(d) List prior to accepting formal public comments. A period of time will also be set aside for informal discussion and questions and answers before the formal public comment period begins.

Oral and written comments on the proposed 2016 303(d) List will be accepted at the public hearing, but written statements are preferred in the interest of accuracy. In

addition, written comments will be considered if received no later than March 11, 2016 at 4:30 p.m. (Central Time). Written statements should be sent to: Jim Wise, Arkansas Department of Environmental Quality, Water Division, 5301 Northshore Drive, North Little Rock, AR 72118. Electronic mail comments should be sent to: ImpairedWaterbodies_Comments@adeq.state.ar.us.

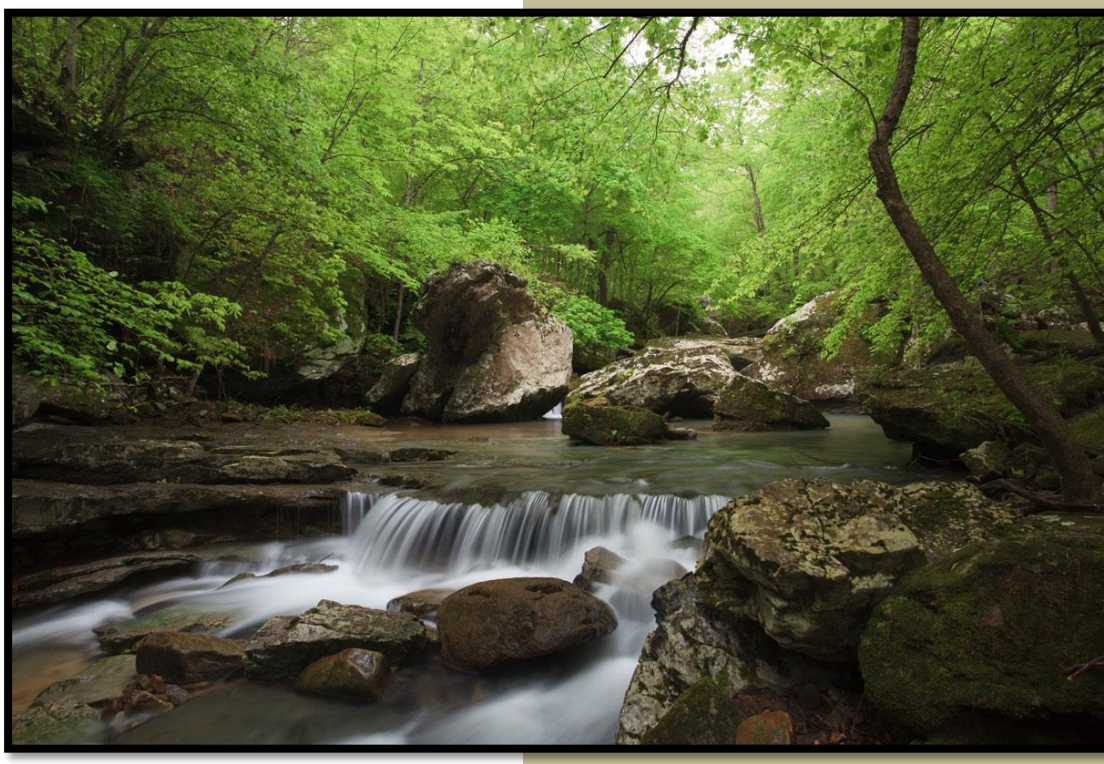
Proposed revisions to the 2016 Arkansas 303(d) List may be incorporated into the 2016 Arkansas Integrated Water Quality Monitoring and Assessment Report (commonly called the 305(b) Report), after approval by the ADEQ Director and the Region 6 Office of the U.S. Environmental Protection Agency (EPA).

Dated this 16th day of January, 2016.

Becky Keogh, Director,
Arkansas Department of Environmental Quality

2016

ASSESSMENT METHODOLOGY



for the Preparation of

The 2016 Integrated Water Quality Monitoring and Assessment Report

Pursuant to Clean Water Act Sections 303(d) and 305(b)

ADEQ WATER DIVISION

WATER QUALITY PLANNING BRANCH

The Water Quality Planning Branch consists of biologists, ecologists, and geologists who manage the State Water Quality Monitoring Networks for both surface and subsurface waters. In addition, the section conducts routine monitoring and intensive, special investigations of the physical, chemical, and biological characteristics of the state's waterbodies and/or aquifers. Data generated from these activities, as well as all other existing and readily available data, are evaluated in the preparation of the biennial "Integrated Water Quality Monitoring and Assessment Report (305(b) Report)," and the "List of Impaired Waterbodies (303(d) list)," to establish priority ranking of Total Maximum Daily Loads for impaired waterbodies. Data may also be used to develop water quality standards and criteria for the evaluation of designated use attainment and to prioritize restoration and remediation activities.

The Water Quality Planning Branch continues to develop and/or enhance ecoregion-based, biological assessment criteria for both fish and macroinvertebrates. Staff are active in the development and updating of water quality standards and the technical review and administration of the National Pollutant Discharge Elimination System Permits Whole Effluent Toxicity Program. Staff members represent the Department on numerous federal, state, local, and watershed-based advisory boards and technical support groups. The Groundwater Section is currently engaged in development of statewide groundwater standards and management of remediation projects that do not fall under the purview of other Arkansas Department of Environmental Quality divisions. The section also oversees portions of the Groundwater Protection Program that are delegated to the Arkansas Department of Health (Wellhead Protection Program) and the Arkansas Natural Resources Commission (Groundwater Protection and Management Program).

Current staff includes:

Sarah Clem, ADEQ Planning Branch Manager

Nat Nehus, Ecologist Coordinator

Jim Wise, Ecologist Coordinator

Mary Barnett, Ecologist Coordinator

Nathan Wentz, Ecologist Coordinator

Roger Miller, PG, Geologist

Melanie Treat, Ecologist

Kristi Williams, Ecologist

Mark Hathcote, Ecologist

Selena Medrano, Ecologist

Cyndi Porter, Ecologist

Katheryn Rose, Ecologist

Jessie Green, Ecologist

Kevin Schanke, Ecologist

Lazendra Hairston, Biologist

To learn more about the Water Division of the Arkansas Department of Environmental Quality, and to view a list of publications by the Water Quality Planning Branch, visit www.adeq.state.ar.us or call (501) 682-0744.

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1.0 ASSESSMENT BACKGROUND

Section 305(b) of the Federal Water Pollution Control Act (hereinafter "Clean Water Act") requires states to perform a comprehensive assessment of the state's water quality to be reported to the U.S. Environmental Protection Agency (EPA) every two years. The report provides information on the quality of the state's waters; the extent to which state waters provide for the protection and propagation of a balanced population of fish, shellfish, and wildlife, and allow recreational activities in and on the water; and how pollution control measures are leading to water quality standards attainment.

In addition, Section 303(d) of the Clean Water Act requires each state to identify waters where existing pollution controls are not stringent enough to achieve state water quality standards, and establish a priority ranking of these waters. States must develop Total Maximum Daily Loads (TMDLs) or other corrective actions for the identified waters. TMDLs describe the amount of each pollutant a waterbody can receive and not violate water quality standards. States submit the list of impaired waters (303(d) list) to EPA; EPA has the option to approve, disapprove, or take no action on the list within 30 days of submission.

Current EPA guidance recommends producing an integrated report combining requirements of the Clean Water Act for Sections 305(b) reporting and 303(d) submissions. The combined report is the *Integrated Water Quality Monitoring and Assessment Report* (305(b) Report). The 305(b) Report describes the quality of all of the surface waters of the state that were evaluated for a specified assessment period. This report is prepared using the *Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b), and 314 of the Clean Water Act; TMDL-01-03*, which is supplemented by memoranda regarding development of the 2008, 2010, 2012, and 2014 305(b) Reports (EPA 2006, 2009, 2011, and 2013 respectively). Arkansas' waters are evaluated in terms of whether their assigned water quality standards and designated uses, as delineated in the Arkansas Pollution Control and Ecology Commission's (APC&EC) Regulation No. 2, are being attained.

APC&EC Regulation No. 2, *Water Quality Standards for Surface Waters of the State of Arkansas*, provides the foundation for the 305(b) Report. APC&EC Regulation No. 2 establishes: water quality standards for surface waters of the State of Arkansas, designated uses associated with those water quality standards, and criteria as well as policies established to protect, maintain, and restore designated uses. Monitoring data are assessed for compliance with APC&EC Regulation No. 2 to determine impairment and designated use support, based upon the frequency, duration, and/or magnitude of water quality standard exceedances as delineated in the Arkansas Department of Environmental Quality's (ADEQ) Assessment Methodology.

ADEQ follows the specific requirements of 40 C.F.R. § 130.7-130.8. ADEQ's Assessment Methodology constitutes the process that the State of Arkansas employs to determine to which of the five integrated reporting categories a monitoring segment belongs. EPA's most current 305(b) reporting and 303(d) listing requirements and guidance were considered when developing this assessment methodology.

2.0 INTEGRATED REPORTING CATEGORIES

Arkansas' waters are assessed based on water quality standard and designated use attainment, as delineated in the state's water quality standards (APC&EC Regulation No. 2) and this assessment methodology. Monitoring segments are the basic unit of record for conducting and reporting water quality assessments. Monitoring segments are individual stream reaches that are grouped by planning segments. The State of Arkansas is divided into 38 water quality planning segments that are congruent with USGS's Watershed Boundary Database 8-digit hydrologic unit code (HUC) boundaries (see Section 3.3 for more detail).

Upon assessment, monitoring segments will be categorized as 'support' or 'non-support.' Monitoring segments will be assessed as support if the segment meets all water quality and designated use criteria for which data are available. A monitoring segment will be assessed as non-support if any water quality standard or designated use is not attained.

Category 5 constitutes the 303(d) impaired waterbodies list. Impaired monitoring segments will be distinguished between pollutant causes currently without a TMDL (Category 5) and pollutant causes for which TMDLs have already been approved (Category 4a). In some instances, a regulatory response outside of a TMDL is permissible and the monitoring segment/pollutant pair is assigned to Category 4b (alternative pollution control).

Arkansas' 305(b) assessments are formatted to reflect EPA's 2011 305(b) guidance, which suggests placing monitoring segments into one of the following five integrated reporting categories. Category 5 is further subdivided by ADEQ for planning and management purposes.

Category 1. Attaining water quality standards for all designated uses, no use is threatened.

Category 2. Available data and/or information indicate that some, but not all of the designated uses are supported.

Category 3. Insufficient data and information are available to determine if any water quality standards are being attained.

- No data available;
- Data do not meet the spatial and/or temporal requirements outlined in this assessment methodology;
- Waters in which the data are questionable because of Quality Assurance and/or Quality Control (QA/QC) procedures and/or the stream segment requires confirmation of impairment before a TMDL is scheduled.

Category 4. Water quality standards are not attained for one or more designated uses but the development of a TMDL is not required because:

4a. A TMDL has been completed for the listed parameter(s);

4b. Other pollution control requirements are expected to result in the attainment of the water quality standard; or

4c. Non-support of the water quality standard is not caused by a pollutant.

Category 5. The waterbody is impaired, or one or more water quality standards may not be attained. Waterbodies in Category 5 will be prioritized as:

High

- Truly impaired; develop a TMDL or other corrective action(s) for the listed parameter(s).

Medium

- Waters currently not attaining standards, but may be de-listed with future revisions to APC&EC Regulation No. 2, the state water quality standards; or
- Waters which are impaired by point source discharges and future permit restrictions are expected to correct the problem(s).

Low

- Waters currently not attaining one or more water quality standards, but all designated uses are determined to be supported; or
- There is insufficient data to make a scientifically defensible decision concerning designated use attainment; or
- Waters ADEQ assessed as unimpaired, but were assessed as impaired by EPA.

3.0 ASSESSMENT PROCESS

Data assessment forms the basis of water quality standard and designated use attainment decisions. In order to conduct accurate assessments, evaluated data must reflect current surface water quality conditions. Data types evaluated may include chemical, physical, biological, habitat, bacteriological, or toxicological information. These data are assessed based on the current EPA-approved water quality standards for the State of Arkansas (APC&EC 2014) and this assessment methodology.

3.1 DATA ASSEMBLY

Pursuant to 40 C.F.R. § 130.7(b)(5), ADEQ assembles and evaluates all existing and readily available water quality data and information to make water quality and designated use attainment decisions. The primary data used in the assessment of Arkansas' water quality are generated as part of ADEQ's water quality monitoring activities, described in the *State of Arkansas' Water Quality Monitoring and Assessment Program, Revision 5*. In addition, state and federal agencies and other entities are asked to provide water quality data that meets or exceeds ADEQ's or USGS' QA/QC protocols. These requests provide a minimum of 30 days to respond before the draft 303(d) list is prepared.

ADEQ data and information solicited includes, but is not limited to:

- Closures, restrictions, and/or advisories applicable to swimming, fish consumption, and drinking water;
- Violations of Safe Drinking Water Act Standards;
- Segment-specific ambient monitoring;
- Large-scale probabilistic monitoring designs;
- Landscape analysis; and
- Complaints from the public.

The period of record for the 2016 305(b) Report is:

Metals and ammonia toxicity analysis: *April 1, 2012 to March 31, 2015*

All other analyses: *April 1, 2010 to March 31, 2015*

Data developed prior to the period of record will be used for long-term trend analysis; data developed after the period of record will be evaluated during the next assessment period, which may include water quality data, completed surveys (including completion of the final report), revisions in water quality standards, and the completion of TMDLs.

3.1.1 NO NEW DATA

If no new water quality data have been generated for a monitoring segment during the current period of record, water quality standard and designated use attainment decisions from the preceding assessment period will be carried forward - unless a substantial change in the water quality standards or the assessment methodology has occurred. If substantial changes in the water quality standards or the assessment methodology has occurred since the preceding assessment period, and those changes would affect previous assessment decisions, the data from the preceding period of record will be re-assessed using the newly-defined water quality standards/methodology to determine current water quality standard attainment.

3.1.2 ABSENCE OF DATA

Water quality standard and designated use attainment assessments can be made for monitoring segments, in the absence of data, if it can be reasonably established that non-monitored segments are similar in watershed characteristic and condition to contiguous monitored segments. ADEQ will consider land use practices, the location of tributaries, impoundments, and other hydrological alterations that could impact the water quality between the station site and the adjacent non-monitored segment. If similarity in watershed characteristic and/or condition cannot be established, contiguous non-monitored segments will remain unassessed.

Water quality standard and designated use non-attainment assessments, in the absence of data, can be made for non-monitored stream segments if it can be reasonably established that the segment is similar with respect to the cause and magnitude of impairment to contiguous monitored waters. However, an evaluation of non-attainment will not be made for non-monitored segments when the source or the origin of the impairment in contiguous monitored waters is unknown, and/or when the magnitude or frequency of the impairment is such that contiguous segments may not be impacted.

Non-monitored segments evaluated using data from monitored segments will be delineated in the Impaired Waterbodies 303(d) list, which can be found at the ADEQ website: http://www.adeq.state.ar.us.

3.2 DATA QUALITY CONSIDERATIONS

ADEQ maintains a strong commitment to the collection and use of high quality data to support environmental decisions and regulatory programs. ADEQ uses data submitted by various entities in different ways, depending on the QA/QC of the data; however, all data submitted to ADEQ will be evaluated.

For data to be utilized in making water quality standard and designated use attainment decisions, data must comply with the acceptability requirements below. Data that do not meet acceptability requirements below will not be used to make water quality standard and designated use attainment decisions; however, these data may be used as a screening tool to determine whether additional monitoring is warranted. As outlined in the 2006 IR guidance and adapted specifically to Arkansas, in order to be used for 305(b) reporting and 303(d) listing assessments, data must:

- Represent actual spatial and temporal annual ambient conditions;
- Be characteristic of the main water mass or distinct hydrologic areas;
- Entire data sets should not be biased toward specific conditions, such as flow, runoff, or season. The exceptions are the analysis of data for those designated uses that require seasonally based water quality data (e.g., primary contact recreation, biological community data, or critical season dissolved oxygen);
- Be reported in standard units recommended in the relevant approved method;
- Have been collected and analyzed under a QA/QC protocol equivalent to or more stringent than that of ADEQ or the USGS. Data collection protocols should either be readily available or accompany the data;
- Be distributed over at least three (3) seasons (to include inter-seasonal variation) and over at least two (2) years (to include temporal variation);
- Not have more than two-thirds of the samples be in one (1) year or one (1) season. The exceptions are the analysis of data for those designated uses that require seasonally based water quality data (e.g., primary contact recreation, biological community data, or critical season dissolved oxygen);
- Have been analyzed pursuant to the rules outlined in the State Environmental Laboratory Certification Program Act, Ark. Code Ann. § 8-2-201 *et seq.* The name and location of the laboratory should either be readily available or accompany the data;
- Be accompanied by precise sample site location(s) data, preferably latitude and longitude in either decimal degrees or degrees, minutes, seconds;
- Be received in either an Excel spreadsheet or compatible format not requiring excessive formatting; and
- Have been collected within the period of record.

3.2.1 TIERED APPROACH TO QUALIFYING DATA

As stated above, data must, at a minimum, have been collected and analyzed under a QA/QC protocol equivalent to or more stringent than that of ADEQ or USGS to be considered for water quality and designated use assessments. Table I describes the defined levels of data quality for each type of data recognized in making support determinations. These tables are adapted from the *Consolidated Assessment and Listing Methodology: Towards a Compendium of Best Practices* guidance document (EPA 2002).

Tier I and Tier II data do not meet acceptability requirements and will be used for screening purposes. Tier III and Tier IV data meet acceptability requirements and will be considered for water quality and designated use assessments.

Table I. Hierarchy of Data Quality Levels for Assessment Use

Data Use	Data Level	Technical Component	Spatial & Temporal Coverage	Data Quality
Used for screening purposes	**Tier I**	Water quality monitoring using grab samples	Low spatial and temporal coverage: • Only a few sites within a basin • Quarterly or less frequent sampling with limited period of record (e.g., 1 day) • Limited data during key periods (e.g., critical hydrological regimes) • Data older than five (5) years that are not likely to reflect current conditions	• Low precision and sensitivity • QA/QC protocols are not met or followed, or QA/QC results are inadequate • Methods not documented • Inadequate metadata
	Tier II	One (1) of the following: • Water quality monitoring using grab samples • Rotating basin surveys involving single visits • Verified volunteer data	Moderate spatial and temporal coverage: • Stream basin coverage, several sites within a basin • Quarterly or bimonthly sampling at fixed stations • Sampling only during a key period (e.g., high and/or low flow) • Data that are likely to reflect current conditions, but may be older than five (5) years	• Low precision and sensitivity • QA/QC protocols followed, QA/QC results adequate • Approved SOPs used for field and lab • Adequate metadata*
Used for assessments	**Tier III**	One (1) of the following: • Water quality monitoring using grab samples • Rotating basin surveys involving multiple visits or automatic sampling • Calibrated models (calibration data greater than 5 years old) • Limited use of continuous monitoring instrumentation	Broad spatial and temporal coverage of sites with sufficient frequency and coverage to capture acute events: • Multiple sites within a basin • Quarterly, bimonthly, or monthly sampling during key periods (e.g., critical hydrological regimes), multiple samples at high and low flows. • Period of sampling adequate to monitor for chronic conditions for the specific parameter of concern (sampling over at least 3 seasons) • Data five (5) years old or less	• Moderate precision and sensitivity • QA/QC protocols followed, QA/QC results adequate • Approved SOPs used for field and lab • Adequate metadata*
	Tier IV	Water quality monitoring using composite samples, a series of grab samples, and/or continuous monitoring devices	Broad spatial and temporal (at least 2 years) coverage of fixed sites with sufficient frequency and coverage to capture acute events, chronic conditions, and all other potential chemical/ physical impacts: • Multiple sites within a basin • Bimonthly or monthly sampling during key periods (e.g., critical hydrological regimes), including multiple samples at high and low flows • Continuous monitoring (e.g., use of thermographs, sondes, or similar devices) • Data five (5) years old or less	• High precision and sensitivity • QA/QC protocols followed, QA/QC results adequate • Approved SOPs used for field and lab; samplers well trained • Adequate metadata*

*Adequate metadata includes: time, date, stream name, latitude/longitude, parameters sampled, Chain of Custody from a State certified lab, and a reference to the QA/QC and standard operating procedures (SOPs) used.

3.2.2 BIOLOGICAL INTEGRITY DATA

The following tables describe defined levels of data quality for each type of data recognized in making aquatic life use support determinations. These tables are adapted from the *Consolidated Assessment and Listing Methodology: Towards a Compendium of Best Practices* guidance document (EPA 2002). Tables for determining the level of data quality for biological, habitat, chemical/physical, and toxicological data types are presented below. It is important to evaluate data quality when an assessment performed with more than one data type results in conflicting designated use attainment decisions. These tables are included only for aquatic life use determinations because it is the only designated use for which multiple data types are currently utilized.

Table II. Hierarchy of Bioassessment Approaches for Aquatic Life Assessment

Data Use	Data Level	Technical Components	Spatial &Temporal Coverage	Data Quality
Used for screening purposes	**Tier I**	• Visual observation of biota • Reference conditions not used • Simple documentation	Low spatial and temporal coverage: • Extrapolation from other sites • Limited monitoring • No taxa identification	• Low precision and sensitivity • Biologist not required • No biological assessment performed
	Tier II	• One (1) assemblage • Reference condition pre-established by a Biologist at site or in comparable watershed • Biotic index or narrative evaluation of historical records	Moderate spatial and temporal coverage: • Minimum of one (1) site • Limited to a single sampling • Identifications to family level	• Low precision and sensitivity • Biologist may provide correspondence • No biological assessment performed
Used for assessments	**Tier III**	• One (1) assemblage • Reference condition may be site specific, or composite of sites • Biotic index (interpretation may be supplemented by narrative evaluation of historical records)	Broad spatial and temporal coverage: • May include limited spatial coverage, with multiple sites, for watershed-level assessments • Monitoring of targeted sites during a single season, may be limited sampling for site-specific studies • Identification to lowest possible taxa*	• Moderate precision and sensitivity • Biologist performs survey or provides training • Biologist performs biological assessment
	Tier IV	• Two (2) assemblages • Regional reference conditions used • Biotic index (single dimension or multi metric index)	Broad spatial and temporal coverage: • Broad coverage of sites for either site-specific or watershed assessments • Monitoring during two (2) sampling seasons • Identification to lowest possible taxa* • Conducive to regional assessments using targeted or probabilistic design	• High precision and sensitivity • Biologist performs survey • Biologist performs biological assessment

*****Identification to lowest possible taxa is generally genus for macroinvertebrates and species for fish.

Table III. Hierarchy of Habitat Assessment Approaches for Aquatic Life Assessment

Data Use	Data Level	Technical Components	Spatial & Temporal Coverage	Data Quality
Used for screening purposes	**Tier I**	• Visual observation of habitat, no true assessment • Documentation of readily discernible land use characteristics that might alter habitat quality • Reference conditions not used	Low spatial and temporal coverage: • Limited spatial coverage • Sporadic visits	• Low precision and sensitivity • Biologist not required
	Tier II	• Visual observation of habitat, simple assessment • Use of land use maps for characterizing watershed condition • Reference conditions pre-established by a biologist	Moderate spatial and temporal coverage: • Limited spatial coverage and/or site-specific studies • Limited to annual visits non-specific to season	• Low precision and sensitivity • Biologist may provide correspondence
Used for assessment	**Tier III**	• EPA's Rapid Bioassessment Protocol used; bioassessment performed • Data on land use may be compiled and used to supplement assessment • Reference condition may be site specific, or composite of sites	Broad spatial and temporal coverage: • Spatial coverage may be limited sampling or broad and commensurate with biological sampling • Assessment during one (1) season usually the norm • Assessment may be regional or site-specific	• Moderate precision and sensitivity • Biologist performs survey or provides training
	Tier IV	• Habitat assessment based on quantitative measurements of in-stream parameters, channel morphology, and floodplain characteristics; bioassessment performed • Data on land use compiled and used to supplement assessment • Reference conditions used as a basis for assessment	Broad spatial and temporal coverage: • Spatial coverage broad and corresponding with biological sampling • Assessment during one to two (1-2) seasons • Assessment may be regional or site-specific	• High precision and sensitivity • Biologist performs survey

Table IV. Hierarchy of Chemical/Physical Data for Aquatic Life Assessment

Data Use	Data Level	Technical Component	Spatial & Temporal Coverage	Data Quality
Used for screening purposes	**Tier I**	Water quality monitoring using grab samples	Low spatial and temporal coverage: • Only a few sites within a basin • Quarterly or less frequent sampling with limited period of record (e.g., 1 day) • Limited data during key periods (e.g., critical hydrological regimes) • Data older than five (5) years that are not likely to reflect current conditions	• Low precision and sensitivity • QA/QC protocols are not followed, or QA/QC results are inadequate • Methods not documented • Inadequate metadata
	Tier II	One (1) of the following: • Water quality monitoring using grab sampling • Rotating basin surveys involving single visits or routine sampling • Verified volunteer data	Moderate spatial and temporal coverage: • Stream basin coverage, several sites within a basin • Quarterly or bimonthly sampling at fixed stations • Sampling during a key period (e.g., high and/or low flow) • Data that are likely to reflect current conditions, but may be older than five (5) years	• Low precision and sensitivity • QA/QC protocols followed, QA/QC results adequate • Approved SOPs used for field and lab • Adequate metadata*
Used for assessment	**Tier III**	One (1) of the following: • Water quality monitoring using grab samples • Rotating basin surveys involving multiple visits or routine sampling • Limited use of continuous monitoring instrumentation • Synthesis of existing or historical information on fish tissue contamination levels	Broad spatial and temporal coverage of sites with sufficient frequency and coverage to capture acute events: • Multiple sites within a basin • Quarterly, bimonthly, or monthly sampling during key periods (e.g., critical hydrological regimes), multiple samples at high and low flows. • Period of sampling adequate to monitor for chronic concerns for the specific parameter of concern (sampling over at least 3 seasons) • Data five 5 years old or less	• Moderate precision and sensitivity • QA/QC protocols followed, QA/QC results adequate • Approved SOPs used for field and lab • Adequate metadata*
	Tier IV	All of the following: • Water quality monitoring using composite samples, series of grab samples, and continuous monitoring devices • Follow-up sediment quality sampling or fish-tissue analyses at site with high probability of contamination	Broad spatial and temporal (at least 2 years) coverage of fixed sites with sufficient frequency and coverage to capture acute events, chronic conditions, and all other potential chemical/ physical impacts: • Multiple sites within a basin • Bimonthly or monthly, including multiple samples at high and low flows • Continuous monitoring (e.g., use of thermographs, sondes, or similar devices) • Data five (5) years old or less	• High precision and sensitivity • QA/QC protocols followed, QA/QC results adequate • Approved SOPs used for field and lab; well-trained personnel • Adequate metadata*

*Adequate metadata includes: time, date, stream name, latitude/longitude, parameters sampled, Chain of Custody from a State certified lab, and a reference to the QA/QC and standard operating procedures (SOPs) used.

Table V. Hierarchy of Toxicological Approaches for Aquatic Life Assessment

Data Use	Data Level	Technical Components	Spatial & Temporal Coverage	Data Quality
Used for screening purposes	**Tier I**	Any one (1) of the following: • Acute or chronic WET* for effluent-dominated channel • Acute ambient water	• One (1) ambient water sample tested in a monitoring segment or site • A minimum of one (1) species	• Low precision and sensitivity • Lab certification unknown
	Tier II	Any one (1) of the following: • Acute or chronic WET for effluent-dominated channel • Acute or chronic ambient water	• Two (2) ambient water samples tested in a monitoring segment or site • Two (2) different dates at least two (2) weeks apart using • A minimum of one (1) species	• Low to moderate precision and sensitivity • Lab certification unknown
Used for assessment	**Tier III**	Any one (1) of the following: • Acute and chronic WET for effluent-dominated channel • Acute or chronic ambient water	• Three (3) ambient water samples tested in a monitoring segment or site • Three (3) different dates at least two (2) weeks apart • A minimum of two (2) species for at least two (2) of the tests	• Moderate precision and sensitivity • Certified Lab
	Tier IV	One (1) of the following: • Acute and chronic WET for effluent-dominated channel • Acute or chronic ambient water	• Four or more (≥4) tests in total, based on samples collected in a monitoring segment or site • Four (4) different dates at least two (2) weeks apart • A minimum of two (2) species for at least two (2) of the tests	• High precision and sensitivity • Certified Lab

*Whole Effluent Toxicity (WET) test.

3.3 DATA REPRESENTATIVENESS CONSIDERATIONS

Spatial and temporal representativeness of data and information must be considered when characterizing annual ambient conditions for a given monitoring segment.

SPATIAL DISTRIBUTION

Arkansas is divided by six major river basins: Red River, Ouachita River, Arkansas River, White River, St. Francis River, and Mississippi River. These six river basins are subdivided into 38 water quality planning segments based on hydrological characteristics, anthropogenic activities, geographic characteristics, and other factors. Water quality planning segments are further broken down into approximately 1,600 smaller watersheds, based on discrete hydrological boundaries as defined by the USGS 12-digit hydrologic unit codes.

Assessment of the State's water quality is based on individual stream reaches grouped by planning segments and based on watersheds. Planning segments are congruent with 8-digit hydrologic unit code boundaries in EPA's River Reach File. This allows geographic information system support with designation, characterization, assessment, and management. Sample locations on streams and open waterbodies should be characteristic of the main water mass or distinct hydrologic areas.

Arkansas has approximately 16,135 miles of rivers and streams digitized in the ADEQ Water Base Layer. The ADEQ Water Base Layer was created from the Medium Resolution (1:100,000-scale) National Hydrography Dataset (NHD). The Medium Resolution NHD includes 2nd, 3rd, 4th and 5th order streams. The NHD combines elements of the Digital Line Graph (DLG) and EPA River Reach File (RF3): spatial accuracy and comprehensiveness from the DLG and network relationships, names, and a unique identifier (reach code) for surface water features from RF3. The NHD supersedes DLG and RF3 by incorporating them, not by replacing them. ADEQ continues to primarily use the Medium Resolution NHD for management and planning activities, but supplements the database primarily by utilizing the High Resolution NHD (1:24,000-scale). The High Resolution NHD includes 1st order streams, or intermittent streams and ephemeral drainages that flow only during a rainfall event.

TEMPORAL DISTRIBUTION

The primary database for the 305(b) Report is generated by ADEQ's Water Quality Monitoring Networks. The networks include the monthly-sampled Ambient Water Quality Monitoring Network (AWQMN) stations and the bi-monthly sampled Roving Water Quality Monitoring Network (RWQMN). The RWQMN stations are divided into five geographic groups that are sampled on a rotating two-year schedule. Additional data, including but not limited to lakes sampling and special projects, developed by ADEQ will be evaluated and used if the sampling frequency and duration represent actual annual ambient conditions.

At a minimum, water quality samples utilized for assessment purposes should be distributed over at least three seasons (to include inter-seasonal variation) and over two years (to include inter-year variation). No more than two-thirds of the samples should be in one year or one season. The exception to this is analysis of data for those designated uses that require seasonally-based water quality data (e.g., primary contact recreation, biological community data, or critical season dissolved oxygen).

The spatial and temporal representativeness of a grab sample is a qualitative assessment that is addressed primarily in the sample design; through the selection of sampling sites and use of procedures that reflect the project goals and environment being sampled (i.e., monitoring the presence and magnitude of toxicity at specific sites for potential impacts on aquatic life may require specialized parameter sampling). For assessment purposes, grab samples from a given monitoring site are considered representative of the waterbody for that distance upstream and downstream in which there are no significant influences to the waterbody that might cause a change in water quality (e.g., point source discharges, confluence with another stream, etc.) or when there is an absence of contextual information indicating unstable hydrologic conditions, such as: 1) precipitation, 2) streamflow, 3) differing land use patterns, or 4) historic patterns of pollutant concentrations in the monitoring segment.

3.4 INSTRUMENT ERROR

Instrument error refers to the combined accuracy and precision of a measuring instrument, or the difference between the value indicated and the actual value. Instrument error must be taken into consideration when conducting water quality standard and use attainment assessments. Water quality data collected from ADEQ's monitoring programs will be evaluated for instrument error, such that values that exceed the numeric water quality standards, but fall within the precision/accuracy error range of the given field instrument, will not be considered an excursion from the water quality standard. See *Arkansas' Water Quality and Compliance Monitoring Quality Assurance Project Plan* (ADEQ 2013) for ADEQ's field instrument performance criteria and for precision/accuracy error range values.

3.5 AGGREGATION OF SAMPLES WITHIN A MONITORING SEGMENT

Monitoring segments are designed to represent homogenous waters with regard to water quality. ADEQ does not typically establish more than one sampling station in any particular monitoring segment for water quality monitoring programs, but there are occasions where more than one river or stream station with available data (typically chemical/physical data) is either established by ADEQ or another entity. If all monitoring segments were selected to be relatively homogenous, it follows that any independent sample taken from a monitoring segment is representative of conditions within that segment. Since each independent sample is considered to be representative of the monitoring segment, aggregation of independent samples within a monitoring segment to assess water quality and designated use support is appropriate.

If water quality data indicate that a monitoring segment is not homogenous (due to point or non-point source discharges), resulting in conflicting attainment conclusions, the monitoring segment will warrant further examination. The assessor will evaluate data from each station individually to confirm impairments and determine whether or not it would be more appropriate to split a monitoring segment. If data indicate that it is more appropriate to split a segment, the resulting monitoring segment(s) will be re-assessed based on data within the newly-defined boundaries for the applicable period of record.

3.6 DATA QUANTITY CONSIDERATIONS

The State of Arkansas has abundant surface water resources; it is estimated that 87,617 stream and river miles, 356,254 acres of publicly-owned lakes, and 800,000 acres of wetlands occur in the state. With this amount of surface water, it is essential that ADEQ develop a monitoring strategy that can provide the information necessary to properly assess these resources so that the physical, chemical, and biological integrity of all Arkansas' waters are protected and enhanced.

ADEQ water quality monitoring goals:

- Identify impaired waters
- Support the evaluation of program effectiveness
- Establish, review, and revise water quality standards
- Establish geographic trends in stream quality
- Refine physical, chemical, and biological assessment tools to improve water quality assessments
- Evaluate water quality and designated use attainment for development of the 305(b) Report
- Characterize the performance of management actions
- Determine appropriate management strategies if designated uses are not being attained
- Assess the effects of point source dischargers upon water quality
- Observe the impact of known nonpoint source pollution trends
- Monitor all waters of the state
- Provide long-term physical, chemical, and biological data, and monitoring of the State's least-disturbed ecoregion reference waterbodies

3.7 ADEQUATE DATA SETS FOR ATTAINMENT DETERMINATIONS

ADEQ strives to follow EPA guidance, which encourages the collection of adequate data to make well-grounded attainment determinations (EPA 2005). The use of limited datasets is acceptable to EPA as limited financial, field, and laboratory resources often dictate the number of samples that can be collected and analyzed (EPA 2002). EPA has not established, required, nor encouraged the establishment of rigid minimum sample set size requirements in the water quality standards attainment status determination process (EPA 2005). As such, EPA discourages the use of target sample sizes applied in an assessment methodology as absolute exclusionary rules (EPA 2005).

However, EPA recognizes that assessments based on larger sample sets are more likely to yield accurate conclusions than assessments based on smaller sample sets, and that it may be appropriate to identify an initial sample size screen, but also provide for a further assessment of sample sets that do not meet the target sample size (EPA 2005).

In an effort to obtain adequate data sets for water quality and designated use attainment decisions, Arkansas' water quality monitoring programs consist of the following surface water networks:

ROUTINE WATER QUALITY MONITORING ACTIVITIES

Ambient Water Quality Monitoring Network: Water samples are systematically collected monthly and analyzed for the parameters listed in the current *State of Arkansas Water Quality Monitoring and Assessment Program, Revision 5.* Flows are determined at a select number of sites taken either by continuous read gages, wire gages, or staff gages read by USGS or ADEQ personnel. The AWQMN provides an overview of water quality conditions and trends at specific sites across the entire state, and generally produces 60 data points per site over a five-year period.

Roving Water Quality Monitoring Network: Water samples are collected from a section of the state on a bi-monthly basis for a two-year period. The samples are analyzed for the same parameters as the AWQMN stations and additional parameters, such as *Escherichia coli* bacteria. The RWQMN typically produces 12 data points per site. At the end of the two-year period, the sampling effort moves to another section of the state.

NON-ROUTINE WATER QUALITY MONITORING ACTIVITIES

Intensive Surveys: These surveys are implemented to assess the physical, chemical, and/or biological conditions of a specific waterbody or watershed.

Special Studies: These studies may or may not be limited to a specific geographic area but may have a very specific objective (e.g., fish tissue consumption, TMDL development, specific designated use attainment determination). In addition, these studies may be necessary if an investigation of a spill area or an area experiencing pollution due to a specific cause is identified.

Ambient Toxicity Testing Program: Water samples are collected at least on a quarterly basis in coordination with the EPA's Houston laboratory to determine the presence and magnitude of toxicity. These surveys are limited to specific streams or watersheds.

Probabilistic Monitoring: These studies are implemented to provide a general overview of the conditions of similar waterbodies, such as lakes of similar characteristics, within an ecoregion.

National Monitoring Initiatives: These studies are nationwide and are implemented to produce a survey of water conditions at a national or regional scale.

Through the current water quality monitoring programs, ADEQ strives for a minimum of 10 water quality samples to make water quality standard and designated use attainment decisions for physical and chemical parameters. The primary goal of obtaining 10 data points is to protect against the occurrence of Type I and Type II errors. A Type I error would result in assessing a monitoring segment as non-support when it is actually fully supporting its standards and uses. A Type II error occurs when a monitoring segment is assessed as support despite it actually not meeting its standards or uses.

For water quality and designated use attainment decisions, data sets containing fewer than 10 ($n<10$) data points will be used as a screening sample. Surface water monitoring segments with fewer than 10 ($n<10$) data points and two or more (≥ 2) exceedances will warrant additional monitoring and may be placed into Category 3 for further investigation; impairments based on this limited dataset may be assessed on a case-by-case basis. Once the sample size reaches 10 data points or greater ($n \geq 10$) the appropriate rate of exceedance will apply.

3.8 LAKES

Arkansas has many diverse landforms that are distinctly divided into major ecoregions. This diversity in geology significantly influences the biological, physical, and chemical nature of the lakes within these regions. The lake area to watershed ratio, watershed land use and geology, primary purpose of the lake, lake construction, and lake management all influence a lake's characteristics.

Surveying Arkansas' significant publicly-owned lakes was initiated in 1989. Currently, Arkansas has 79 impoundments identified as significant publicly-owned lakes. These lakes range in size from 60 acres to over 45,000 acres. Larger lakes sampled by the Department typically have two sampling stations, one near the inlet and one near the deepest part of the lake, usually near the dam. Smaller lakes sampled by the Department will have one sampling station near the deepest part of the lake, usually near the dam. Sampling and assessment of each of the lakes generally occurred once every five years. Water samples are analyzed for routine water quality parameters, as well as chlorophyll *a*, bacteria, metals, plankton, and temperature and dissolved oxygen depth profiles.

In 2008, ADEQ revised its lakes monitoring program in order to generate the data necessary to develop lake-specific water quality standards and monitoring strategies. The *Beaver Reservoir Water Quality Standards and Assessment Criteria Development* (ADEQ 2005) and the *Water Quality of Potential Reference Lakes in Two Level-III Ecoregions of Arkansas* (ADEQ 2006) projects have been completed, and additional studies in the Ozark Highlands and Boston Mountains have been initiated to help accomplish this task.

The completion of the *Beaver Reservoir Water Quality Standards and Assessment Criteria Development* (ADEQ 2005) project has led to the creation of site specific numeric nutrient criteria for Beaver Lake. ADEQ is moving forward with its Nutrient Criteria Development Plan, with the intention of adapting the methodology, tools, and procedures derived from the Beaver Lake study to establish numeric nutrient criteria (chlorophyll *a* and transparency) for additional lakes around the state. The goal of this project is to develop nutrient criteria that fully recognize localized conditions and protect the specific designated uses of these waterbodies. Lake classification and adoption of this classification into the state's water quality standards must also be completed.

3.9 IMPAIRMENT SOURCE DETERMINATION

For any monitored surface water segment where a water quality standard has been evaluated as non-support, the source(s) of impairment will be identified using all available information (field observation, land use maps, point source location, nonpoint source assessment reports, special studies, and knowledge of field personnel familiar with the waterbody) and best professional judgment.

3.10 WQAR

The Water Quality Analysis Reporter (WQAR) was created to calculate, store, and organize the attainment results obtained from water quality data. Attainment results are calculated using the water quality standards in APC&EC Regulation No. 2 and the processes outlined in ADEQ's Assessment Methodology.

Station IDs are assigned to monitoring segments where applicable. Monitoring segments with assigned stations are identified as "monitored." Monitoring segments without stations, where data from another segment is used for evaluating attainment, are identified as "evaluated" and the assessment unit containing the station data is linked to the unit without the data for tracking purposes. Monitoring segments are identified as "unassessed" when there are no water quality data available with which to evaluate attainment.

Water quality standards and methodology processes have been entered into the WQAR system as standard sets. Standard sets contain specific water quality criteria for parameters that apply to waters. For instance, the "Boston Mountains Less than 10 sqmi" standard set contains specific criteria that apply to Boston Mountain streams with watershed areas of less than 10 mi^2 for temperature, primary and critical season dissolved oxygen, and turbidity all flows and base flows. The "Boston Mountains Less than 10 sqmi" standard set can then be applied to all assessment units in the Boston Mountains ecoregion that have watershed areas of less than 10 mi^2. Other standard sets that apply more broadly include parameters such as pH, metals, bacteria, and minerals.

WQAR automatically calculates attainment of each standard using station data pulled directly from the Laboratory Information Management System (LIMS). Attainment is calculated for each standard applied to the monitoring segment for the period of record. The integrated reporting category for each parameter is examined and the final integrated reporting category is determined for the monitoring segment.

4.0 WATER QUALITY STANDARD ASSESSMENT METHODOLOGY

Water quality standards are comprised of: 1) an antidegradation policy; 2) designated uses; and 3) narrative and numeric criteria, which work in concert to protect water quality.

4.1 ANTIDEGRADATION

An antidegradation policy is a requirement of the federal Clean Water Act, which is designed to prevent or limit future degradation of the nation's waters. The APC&EC's Regulation No. 2 contains an antidegradation policy that applies to all surface waters of the state. Existing instream uses and the level of water quality necessary to protect the existing uses shall be maintained and protected. Arkansas' Outstanding Resource Waters, as delineated in APC&EC Reg. 2.203, are to be protected and maintained for those beneficial uses and water quality for which the outstanding resource designation was granted. These waterbodies will be listed as non-support if the chemical, physical, and/or biological characteristics for which the waterbody was designated have been determined to be impaired or absent, as defined by the following assessment criteria. Per APC&EC Reg. 2.204, in those cases where potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy and implementing method shall be consistent with Section 310 of the Clean Water Act, 33 U.S.C. § 1326.

4.2 DESIGNATED USES

Table VI. Designated Uses for Arkansas' Surface Waters

Designated Use	Parameters
Aquatic Life **Reg. 2.302(F)**	Biological Integrity (macroinvertebrate and/or fish) data.
Domestic Water Supply **Reg. 2.302(G)**	Compounds that are not easily removed by drinking water treatment facilities; compounds with established secondary maximum contaminant levels (e.g., chlorides, sulfates, & total dissolved solids).
Primary and Secondary Contact **Reg. 2.302(D) & (E)**	*Escherichia coli* (*E. coli*) (Fecal Coliform bacteria data will be used in the absence of *E. coli* data).
Agriculture & Industrial Water Supply **Reg. 2.302(H) & (I)**	Compounds which interfere with industrial uses, such as cooling water or the water used in certain manufacturing processes; or waters unsuitable for livestock watering or crop irrigation; most often includes chlorides, sulfates, & total dissolved solids.

4.3 NARRATIVE AND NUMERIC CRITERIA

4.3.1 NARRATIVE CRITERIA

APC&EC Regulation No. 2 contains narrative criteria (written descriptions) that apply to all waters of the state and are used to evaluate support of applicable uses. Narrative criteria include general descriptions, such as the existence of nuisance species, taste- and odor-producing substances, visible globules on surface waters, and toxins. Narrative criteria are evaluated by using screening levels, if they are available, as well as other information, including water quality studies, existence of fish kills or contaminant spills, and photographic evidence. Waters will be assessed as non-support when a violation of any narrative water quality standard has been verified by ADEQ. In addition, waters will be assessed as non-support if any associated numeric standard of a narrative criterion is violated pursuant to this assessment methodology.

4.3.2 NUMERIC CRITERIA

Numeric criteria are values established in APC&EC Regulation No. 2 that provide a quantitative basis for evaluating designated use support and for managing point and nonpoint loadings in Arkansas' surface waters. Procedures for assessing instream water quality against numerical criteria are outlined in Section 6.0.

5.0 GENERAL STANDARDS

5.1 BIOLOGICAL INTEGRITY

This section establishes the protocol for assessment of biological integrity for Arkansas' surface waters, per APC&EC Reg. 2.405:

> *For all waters with specific aquatic life use designated in Appendix A, aquatic biota should not be impacted. Aquatic biota should be representative of streams that have the ability to support the designated fishery, taking into consideration the seasonal and natural variability of the aquatic biota community under naturally varying habitat and hydrological conditions; the technical and economic feasibility of the options available to address the relevant conditions; and other factors.*
>
> *An aquatic biota assessment should compare biota communities that are similar in habitat and hydrologic condition, based upon either an in-stream study including an upstream and downstream comparison, a comparison to a reference water body within the same ecoregion, or a comparison to community characteristics from a composite of reference waters. Such a comparison should consider the seasonal and natural variability of the aquatic biota community. It is the responsibility of the Department to evaluate the data for an aquatic biota assessment to protect aquatic life uses designated in Appendix A. Such data may be used to develop permit effluent limitations or conditions.*

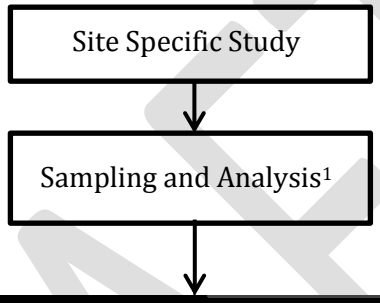
ASSESSMENT METHODOLOGY FOR BIOLOGICAL INTEGRITY

The aquatic life designated use is evaluated based on the biological integrity (macroinvertebrate and/or fish communities) of the waterbody, where biological data exist to make an assessment. At a minimum, biological and chemical/physical data must have been collected over two seasons (preferably a minimum of two years) using methods outlined in a Quality Assurance Project Plan with requirements equal to or more stringent than that of ADEQ or USGS (See Section 3.2.2 Biological Integrity Data for additional information on data requirements). Results from acute and chronic toxicity tests of vertebrates and invertebrates will also be evaluated, when available, but are not required to make a use determination.

MACROINVERTEBRATE ASSEMBLAGE ANALYSIS

Matrices set forth in Rapid Bioassessment Protocols for Use in Stream and Rivers (Plafkin et al., 1989) are used in analysis of macroinvertebrate assemblage samples. Each site will have a Rapid Bioassessment score derived from a multi-metric analysis, which includes: 1) Taxa Richness, 2) Ephemeroptera-Plecoptera-Tricoptera Index (EPT), 3) Hilsenhoff Biotic Index (HBI), 4) Percent Dominant Contribution. See *Arkansas' Water Quality and Compliance Monitoring Quality Assurance Project Plan* (ADEQ 2013) at the ADEQ website: http://adeq.state.ar.us for more information.

Table VII. Flowchart Identifying Macroinvertebrate Bioassessment Metrics and Scoring Criteria



Metric	Biological Condition Scoring Criteria			
	6	4	2	0
Taxa Richness[2]	>80%	60-80%	40-60%	<40%
Hilsenhoff Biotic Index[3]	>85%	70-85%	50-70%	<50%
Ratio of EPT to Chironomid Abundances[2]	>75%	50-75%	25-50%	<25%
% Contribution of Dominant Taxa[4]	<20%	20-30%	30-40%	>40%
EPT Index[2]	>90%	80-90%	70-80%	<70%
Community Loss Index[5]	<0.5	0.5-1.5	1.5-4.0	>4.0

[1] Modified from Plafkin, J.L. M.T. Barbour, K.D. Porter, S.K. Gross, and R.M. Hughes. 1989. Rapid bioassessment protocols for use in streams and rivers: Benthic macroinvertebrates and fish. U.S. Environmental Protection Agency, Office of Water Regulations and Standards, Washington D.C. EPA 440-4-89-001.

[2] Score is a ratio of study site to reference site X 100.

[3] Score is a ratio of reference site to study site X 100.

[4] Scoring criteria evaluate actual percent contribution, not percent comparability to reference site.

[5] Range of values obtained. A comparison to the reference site is incorporated in these indices.

Biological condition scores are summed (see Table VII above) to calculate assemblage attainment decisions. A biological condition score is calculated for each sample and sample site. The ratio of scores between the sample site to reference site, or condition, provides the percent comparability for each station (Table VIII). Only the percent comparable estimate score is then used to determine attainment status (Table X). The percent comparable estimate categories are:

Table VIII. Scoring Criteria for Macroinvertebrate Assemblage Attainment Decisions

Attainment Status	% Comparable Estimate	Attribute
Comparable to reference	≥90%	Expected to support the community structure present at the reference site
Supporting	75-88%	Should support a diverse community similar to the reference site
Partially Supporting	60-73%	Difference in the biological community may be due to the poor habitat. Comparisons may be difficult
Non-supporting	<58%	Should not be expected to support the community present at the reference site

FISH ASSEMBLAGE ANALYSIS

ADEQ's Community Structure Index (CSI) will be used in the analysis of fish assemblages. The CSI was established utilizing information from the 1987 ecoregion survey (APC&EC 1987) and supplemented with data from additional least-disturbed streams identified by ADEQ personnel. A group of Arkansas ichthyologists reviewed the data. The current metric scores and similarity ranking categories were established utilizing the prevailing deviations in the ecoregion survey data set and employ best professional judgment. Ecoregion specific metrics for watersheds (>10mi^2) outlined in *Arkansas' Water Quality and Compliance Monitoring Quality Assurance Project Plan* (ADEQ 2013), available at the ADEQ website: http://adeq.state.ar.us, will be calculated for each site and total scores will be evaluated and assessed as follows:

Table IX. Fish Community Structure Index Ecoregion Values

Ecoregion	Total Score	Category	Attribute
Ozark Highlands **Boston Mountains** **Ouachita Mountains** **AR River Valley** **Typical Gulf Coastal** **Spring-Influenced Gulf Coastal**	**25-32**	Mostly Similar	Comparable to the best situation to be expected. Balanced trophic structure and optimum community structure present.
	24-17	Generally Similar	Community structure less than expected. Taxa richness lower than expected. Some intolerant taxa loss. Percent contribution of tolerant forms may increase.
	16-9	Somewhat Similar	Obvious decline in taxa richness due to the loss of tolerant forms. Loss of Key and Indicator taxa.
	0-8	Not Similar	Few taxa present and normally dominated by one (1) or two (2) taxa.
Channel Altered Delta **Least-Disturbed Delta**	**22-28**	Mostly Similar	Comparable to the best situation to be expected. Balanced trophic structure and optimum community structure present.
	21-15	Generally Similar	Community structure less than expected. Taxa richness lower than expected. Some intolerant taxa loss. Percent contribution of tolerant forms may increase.
	14-8	Somewhat Similar	Obvious decline in taxa richness due to the loss of tolerant forms. Loss of Key and Indicator taxa.
	0-8	Not Similar	Few taxa present and normally dominated by one (1) or two (2) taxa.

Results from fish and macroinvertebrate assemblage analysis, along with evaluation of chemical and physical data, will be used to determine support or non-support of the fisheries designated use.

AQUATIC LIFE USE ATTAINMENT DETERMINATION

Table X. Biological Assemblage Assessment Determination

Data Type	Support	Non-Support
Macroinvertebrate Community Data Available	Macroinvertebrate community structure analysis indicates comparable to reference or supporting	Macroinvertebrate community structure analysis indicates partially supporting or non-supporting*
Fish Community Data Available	Community Structure Index score is either mostly or generally similar; general presence of sensitive and indicator species	Community Structure Index score is either somewhat or not similar; absence of sensitive and indicator species*

* The fisheries designated use may be assessed as support, despite an initial evaluation of non-support, if it is demonstrated that the non-support assessment is due to unrepresentative biological community data and not an environmental factor (low dissolved oxygen, low pH, toxicity); based on acceptable variances in ecoregion assemblage structures. Under certain conditions, biological community data can be skewed due to an unrepresentative sample, which includes but is not limited to:

- Collection of irruptive species (e.g., large percentage of young-of-year in an isolated area that is not representative of the entire reach), which could trigger an inaccurate 'non-support' determination.
- Transitional areas between ecoregions.

Best professional judgment is used in these circumstances to prevent the inappropriate listing of waters. If a support determination is made due to an unrepresentative sample, it will be explained in detail in the 305(b) Report and supporting documentation will be provided.

Table XI. Aquatic Life Designated Use Listing Protocol

Type of Data Present	Evaluation Result		Final Assessment	Listing Category
	Fish Community	Macroinvertebrate Community		
Fish Community and/or Macroinvertebrate Community	S	S	FS	1
	S	NS	NS	5
	NS	S	NS	5
	NS	NS	NS	5
At Least One Biological Community	S	NA	FS	1
	NA	S	FS	1
	S	S	FS	1
	NA	NA	UA	3
	NS	NA	NS	5
	NA	NS	NS	5

S = Support NS = Non-Support FS = Fully Supporting NA = No Available Data UA = Unassessed

AMBIENT TOXICITY ANALYSIS

Results from acute and chronic toxicity tests of vertebrates and invertebrates will also be evaluated, when available, but are not required to make a use determination.

Table XII. Ambient Toxicity Listing Protocol

Type of Test	Evaluation Result		Final Assessment	Listing Category
	Vertebrate	Invertebrate		
Acute Toxicity	S	S	FS	1
	S	NS	NS	5
	NS	S	NS	5
	NS	NS	NS	5
Chronic Toxicity	S	S	FS	1
	S	NS	NS	5
	NS	S	NS	5
	NS	NS	NS	5

S = Support NS = Non-Support FS = Fully Supporting

LISTING METHODOLOGY:

Stream and river monitoring segments will be listed as non-support when one or both of the evaluated biological communities (macroinvertebrates and/or fish) indicate perturbation/degradation, or when one or both of the toxicological test organisms (vertebrate and/or invertebrate) fail more than one acute or chronic toxicity test in a three-year period.

DELISTING METHODOLOGY:

Stream and river monitoring segments will be listed as support when evaluated biological communities (macroinvertebrates and/or fish) do not indicate perturbation/degradation, and/or when there have been no acute or chronic toxicity test failures in a three-year period.

6.0 SPECIFIC STANDARDS

Per APC&EC Reg. 2.501 (Applicability), unless otherwise indicated, the following specific standards shall apply to all surface waters of the state at all times except during periods when flows are less than the applicable critical flow. Streams with regulated flow will be addressed on a case-by-case basis to maintain designated instream uses. These standards apply outside the applicable mixing zone.

Primary contact recreation, secondary contact recreation, and the majority of lake aquatic life productivity occur in the epilimnion; therefore, specific standards for lakes and reservoirs apply at 1.0 meter depth to assess the designated uses where they occur.

Unless otherwise stated for a specific standard, the number of samples needed for determination of non-support is calculated using the total number of samples collected, rounded up to the nearest 'tens' place (10, 20, 30…), then multiplied by the applicable percent exceedance criterion. For example, given a sample size of 18 and a greater than 10 percent exceedance rate, a total of three (3) exceedances are needed for the determination of non-support (18 samples is rounded up to 20, then multiplied by the 10% exceedance rate, which equals 2 samples; thus if 3 or more samples exceed the criterion, a non-support evaluation is assigned).

The rounding method used by the Department has been shown to be no less stringent than other methods approved by EPA for protecting water quality. This method allows the Department to assess the data in the same way as the samples are collected - as whole samples. Not using the rounding method would result in the assessment of partial samples, which does not reflect actual field sampling procedures.

Refer to Appendix A for ecoregion based Assessment Criteria Tables; Appendix B for the Assessment Criteria Table for Arkansas' lakes; and Appendix C for Assessment Criteria Tables for Arkansas' major rivers.

6.1 TEMPERATURE

This section establishes the protocol for determining impairment due to increases in temperature of Arkansas' surface waters, per APC&EC Reg. 2.502:

> *Heat shall not be added to any waterbody in excess of the amount that will elevate the natural temperature, outside the mixing zone, by more than 5°F (2.8°C) based upon the monthly average of the maximum daily temperatures measured at mid-depth or three feet (whichever is less) in streams, lakes or reservoirs. The following standards are applicable:*

Waterbodies	***Limit ˚C (˚F)***
Streams	
Ozark Highlands	*29 (84.2)*
Boston Mountains	*31 (87.8)*
Arkansas River Valley	*31 (87.8)*

Waterbodies	***Limit ˚C (˚F)***
Ouachita Mountains	*30 (86.0)*
Springwater-influenced Gulf Coastal	*30 (86.0)*
Typical Gulf Coastal	*30 (86.0)*
Least-Altered Delta	*30 (86.0)*
Channel-Altered Delta	*32 (89.6)*
White River (Dam #1 to mouth)	*32 (89.6)*
St. Francis River	*32 (89.6)*
Mississippi River	*32 (89.6)*
Arkansas River	*32 (89.6)*
Ouachita River (L. Missouri to Louisiana state line)	*32 (89.6)*
Red River	*32 (89.6)*
Lakes and Reservoirs	*32 (89.6)*
Trout waters	*20 (68.0)*

Temperature requirements shall not apply to off-stream privately-owned reservoirs constructed primarily for industrial cooling purposes and financed in whole or in part by the entity or successor entity using the lake for cooling purposes.

ASSESSMENT METHODOLOGY FOR TEMPERATURE

LISTING METHODOLOGY:

Stream and river monitoring segments will be listed as non-support when ADEQ determines that more than 10 percent of the total samples within the period of record exceed the applicable temperature standard listed in APC&EC Reg. 2.502.

Lakes and reservoirs will be listed as non-support when ADEQ determines that more than 10 percent of the total samples within the period of record exceed the temperature standard of 32°C (89.6°F). Samples collected 1.0 meter below the surface of the water will be used to make lake and reservoir attainment decisions.

DELISTING METHODOLOGY:

Stream and river monitoring segments will be listed as support when ADEQ determines that 10 percent or less of the total samples within the period of record exceed the applicable temperature standard listed in APC&EC Reg. 2.502.

Lakes and reservoirs will be listed as support when ADEQ determines that 10 percent or less of the total samples within the period of record exceed the temperature standard of 32°C (89.6°F). Samples collected 1.0 meter below the surface of the water will be used to make lake and reservoir attainment decisions.

6.2 TURBIDITY

As established by APC&EC Reg. 2.503, turbidity will be evaluated for both base flows and all flows values. Base flows values represent the critical season, June 1 to October 31, when rainfall is infrequent; all flows values take into account samples collected throughout the year (including samples collected between June 1 to October 31). APC&EC Reg. 2.503 states:

> *There shall be no distinctly visible increase in turbidity of receiving waters attributable to discharges or instream activities. The values below should not be exceeded during base flow (June to October) in more than 20% of samples. The values below should not be exceeded during all flows in more than 25% of samples taken in not less than 24 monthly samples.*

Waterbodies	***Base Flows Values (NTU)***	***All Flows Values (NTU)***
Streams		
Ozark Highlands	*10*	*17*
Boston Mountains	*10*	*19*
Arkansas River Valley	*21*	*40*
Ouachita Mountains	*10*	*18*
Springwater-influenced Gulf Coastal	*21*	*32*
Typical Gulf Coastal	*21*	*32*
Least-Altered Delta	*45*	*84*
Channel-Altered Delta	*75*	*250*
Arkansas River	*50*	*52*
Mississippi River	*50*	*75*
Red River	*50*	*150*
St. Francis River	*75*	*100*
Trout	*10*	*15*
Lakes and Reservoirs	*25*	*45*

ASSESSMENT METHODOLOGY FOR TURBIDITY

Base Flows Values

Base flow values apply to data collected between June 1 and October 31.

BASE FLOWS LISTING METHODOLOGY:

Stream and river monitoring segments will be listed as non-support when more than 20 percent of the total samples between June 1 and October 31 within the period of record exceed the applicable base flows values, listed in APC&EC Reg. 2.503.

Lakes and reservoirs will be listed as non-support when more than 20 percent of the total samples between June 1 and October 31 within the period of record exceed the turbidity standard of 25 NTU. Samples collected 1.0 meter below the surface of the water will be used to make lake and reservoir attainment decisions.

BASE FLOWS DELISTING METHODOLOGY:

Stream and river monitoring segments will be listed as support when 20 percent or less of the total samples between June 1 and October 31 within the period of record exceed the applicable base flows values, listed in APC&EC Reg. 2.503.

Lakes and reservoirs will be listed as support when 20 percent or less of the total samples between June 1 and October 31 within the period of record exceed the turbidity standard of 25 NTU. Samples collected 1.0 meter below the surface of the water will be used to make lake and reservoir attainment decisions.

All Flows Values

All flows values apply to data collected throughout the year, including data collected between June 1 and October 31.

ALL FLOWS LISTING METHODOLOGY:

Stream and river monitoring segments will be listed as non-support when more than 25 percent of the total samples (sample set not to be fewer than 24 data points) within the period of record exceed the applicable all flows values, listed in APC&EC Reg. 2.503.

Lakes and reservoirs will be listed as non-support when more than 25 percent of the total samples (sample set not to be fewer than 24 data points) within the period of record exceed the turbidity standard of 45 NTU. Samples collected 1.0 meter below the surface of the water will be used to make lake and reservoir attainment decisions.

ALL FLOWS DELISTING METHODOLOGY:

Stream and river monitoring segments will be listed as support when 25 percent or less of the total samples (sample set not to be fewer than 24 data points) within the period of record exceed the applicable all flows values listed in APC&EC Reg. 2.503.

Lakes and reservoirs will be listed as support when 25 percent or less of the total samples (sample set not to be fewer than 24 data points) within the period of record exceed the turbidity standard of 45 NTU. Samples collected 1.0 meter below the surface of the water will be used to make lake and reservoir attainment decisions.

If a monitoring segment is assessed as not meeting either the base flows or all flows values, or both, it will be listed as non-support for turbidity.

6.3 pH

This section establishes the protocol for determining impairment due to fluctuations in pH, per APC&EC Reg. 2.504:

> *pH between 6.0 and 9.0 standard units are the applicable standards for streams. For lakes, the standards are applicable at 1.0 meter depth. As a result of waste discharges, the pH of water in streams or lakes must not fluctuate in excess of 1.0 standard unit over a period of 24 hours.*

ASSESSMENT METHODOLOGY FOR pH

LISTING METHODOLOGY:

Stream and river monitoring segments will be listed as non-support when ADEQ determines that anthropogenic activities result in a variance from the pH standard (between 6.0 and 9.0 standard units) in more than 10 percent of the total samples within the period of record.

Lakes and reservoirs will be listed as non-support when ADEQ determines that anthropogenic activities result in a variance from the pH standard (between 6.0 and 9.0 standard units) in more than 10 percent of the total samples within the period of record. Samples collected at 1.0 meter below the surface of the water will be used to make lake and reservoir attainment decisions.

If the pH value for lakes, rivers, or streams varies from the pH standard due to natural conditions, (i.e., anthropogenic activities cannot be identified by ADEQ as the source) the waterbody will not be listed as non-support, but will be noted in the 305(b) Report.

DELISTING METHODOLOGY:

Stream and river monitoring segments will be listed as support when ADEQ determines that anthropogenic activities result in variance from the pH standard (between 6.0 and 9.0 standard units) in 10 percent or less of the total samples within the period of record.

Lakes and reservoirs will be listed as support when ADEQ determines that anthropogenic activities result in variance from the pH standard (between 6.0 and 9.0 standard units) in 10 percent or less of the total samples within the period of record. Samples collected at 1.0 meter below the surface of the water will be used to make lake and reservoir attainment decisions.

6.4 DISSOLVED OXYGEN

This section establishes the protocol for determining impairment due to variations in dissolved oxygen, per APC&EC Reg. 2.505:

Rivers and Streams

The following dissolved oxygen standards must be met:

Waterbodies	***Limit (mg/L)***	
Streams	*Primary*	*Critical*
Ozark Highlands		
<10 mi² watershed	*6*	*2*
10 to 100 mi²	*6*	*5*
>100 mi² watershed	*6*	*6*
Boston Mountains		
<10 mi² watershed	*6*	*2*
>10 mi² watershed	*6*	*6*
Arkansas River Valley		
<10 mi² watershed	*5*	*2*
10 mi² to 150 mi²	*5*	*3*
151 mi² to 400 mi²	*5*	*4*
>400 mi² watershed	*5*	*5*
Ouachita Mountains		
<10 mi² watershed	*6*	*2*
>10 mi² watershed	*6*	*6*
Typical Gulf Coastal		
<10 mi² watershed	*5*	*2*
10 mi² to 500 mi²	*5*	*3*
>500 mi² watershed	*5*	*5*
Springwater-influenced Gulf Coastal		
All size watersheds	*6*	*5*
Delta (least-altered and channel altered)		
<10 mi² watershed	*5*	*2*
10 mi² to 100 mi²	*5*	*3*
>100 mi² watershed	*5*	*5*
Trout Waters		
All size watersheds	*6*	*6*

In streams with watersheds of less than 10 mi², it is assumed that insufficient water exists to support a fishery during the critical season. During this time, a dissolved oxygen standard of 2 mg/l will apply to prevent nuisance conditions. However, field verification is required in areas suspected of having significant groundwater flows or enduring pools which may support unique aquatic biota. In such waters the critical season standard for the next size category of stream shall apply.

All streams with watersheds of less than 10 mi² are expected to support aquatic life during the primary season when stream flows, including discharges, equal or exceed 1 cubic foot per second (cfs). However, when site verification indicates that aquatic life exists at flows below 1 cfs, such aquatic biota will be protected by the primary standard (refer to the State of Arkansas Continuing Planning Process for field verification requirements).

Also, in these streams with watersheds of less than 10 mi², where waste discharges are 1 cfs or more, they are assumed to provide sufficient water to support aquatic life and, therefore, must meet the dissolved oxygen standards of the next size category of streams.

For purposes of determining effluent discharge limits, the following conditions shall apply:

(A) The primary season dissolved oxygen standard is to be met at a water temperature of 22˚C (71.5˚F) and at the minimum stream flow for that season. At water temperatures of 10˚C (50˚F), the dissolved oxygen standard is 6.5 mg/L.

(B) During March, April and May, when background stream flows are 15 cfs or higher, the dissolved oxygen standard is 6.5 mg/L in all areas except the Delta Ecoregion, where the primary season dissolved oxygen standard will remain at 5 mg/L.

(C) The critical season dissolved oxygen standard is to be met at maximum allowable water temperatures and at Q7-10 flows. However, when water temperatures exceed 22˚C (71.6˚F), a 1 mg/L diurnal depression will be allowed below the applicable critical standard for no more than 8 hours during any 24-hour period.

Lakes and Reservoirs

Specific dissolved oxygen standards for lakes and reservoirs shall be 5 mg/L applicable at 1.0 meter depth. Effluent limits for oxygen-demanding discharges into impounded waters are promulgated in Arkansas Pollution Control and Ecology Commission Regulation No. 6, Regulations for State Administration of the National Pollutant Discharge Elimination System (NPDES). However, the Commission may, after full satisfaction of the intergovernmental coordination and public participation provisions of the State of Arkansas Continuing Planning Process, establish alternative limits for dissolved oxygen in lakes and reservoirs where studies and other relevant information can demonstrate that predominant ecosystem conditions may be more accurately reflected by such alternate limits; provided that these limits shall be compatible with all designated beneficial uses of named lakes and reservoirs.

ASSESSMENT METHODOLOGY FOR DISSOLVED OXYGEN

Dissolved oxygen standards are divided into two (2) categories:

1) **Primary season:** Water temperatures are at or below 22°C.
2) **Critical season:** Water temperatures exceed 22°C.

LISTING METHODOLOGY:

Stream and river monitoring segments will be listed as non-support when more than 10 percent of the total samples for primary or critical season within the period of record fail to meet the minimum applicable dissolved oxygen standard listed in APC&EC Reg. 2.505.

Lakes and reservoirs will be listed as non-support when more than 10 percent of the samples for primary or critical season within the period of record fall below 5 mg/L. Samples collected at 1.0 meter below the surface of the water will be used to make lake and reservoir attainment decisions.

DELISTING METHODOLOGY:

Stream and river monitoring segments will be listed as support when 10 percent or less of the total samples for primary or critical season within the period of record fail to meet the minimum applicable dissolved oxygen standard listed in APC&EC Reg. 2.505.

Lakes and reservoirs will be listed as support when 10 percent or less of the total samples for primary or critical season in the period of record do not fall below 5 mg/L. Samples collected at 1.0 meter below the surface of the water will be used to make lake and reservoir attainment decisions.

6.5 RADIOACTIVITY

This section establishes the protocol for determining impairment due to exceedance of limits for Radioactivity, per APC&EC Reg. 2.506:

> *The Rules and Regulations for the Control of Sources of Ionizing Radiation of the Division of Radiological Health, Arkansas Department of Health, limits the maximum permissible levels of radiation that may be present in effluents to surface waters in uncontrollable areas. These limits shall apply for the purposes of these standards, except that in no case shall the levels of dissolved radium-226 and strontium-90 exceed 3 and 10 picocuries/liter, respectively, in the receiving water after mixing, nor shall the gross beta concentration exceed 1000 picocuries/liter.*

ASSESSMENT METHODOLOGY FOR RADIOACTIVITY

LISTING METHODOLOGY:

Stream and river monitoring segments will be listed as non-support when a single sample within the period of record exceeds the concentration of 3 picocuries/Liter for radium-226, or the concentration of 10 picocuries/Liter for strontium-90.

Lakes and reservoirs will be listed as non-support when a single sample within the period of record exceeds the concentration of 3 picocuries/Liter for radium-226, or the concentration of 10 picocuries/Liter for strontium-90. Samples collected at 1.0 meter below the surface of the water will be used to make lake and reservoir attainment decisions.

DELISTING METHODOLOGY:

Stream and river monitoring segments will be listed as support when there are no samples within the period of record that exceed the concentration of 3 picocuries/Liter for radium-226, or the concentration of 10 picocuries/Liter for strontium-90.

Lakes and reservoirs will be listed as support when no samples within the period of record exceed the concentration of 3 picocuries/Liter for radium-226, or the concentration of 10 picocuries/Liter for strontium-90. Samples collected at 1.0 meter below the surface of the water will be used to make lake and reservoir attainment decisions.

6.6 BACTERIA

This section establishes the protocol for assessment of ambient waters, primary and secondary contact recreation designated uses will be evaluated using *Escherichia coli* as outlined in Reg. 2.507:

For the purposes of this regulation, all streams with watersheds less than 10 mi² shall not be designated for primary contact unless and until site verification indicates that such use is attainable. No mixing zones are allowed for discharges of bacteria.

For assessment of ambient waters as impaired by bacteria, the below listed applicable values for E. coli shall not be exceeded in more than 25% of samples in no less than eight (8) samples taken during the primary contact season or during the secondary contact season.

The following standards are applicable:

Contact Recreation Seasons	***Limit (col/100mL)***			
Primary Contact[1]	*E. coli*		*Fecal Coliform*	
	IS[3]	*GM[4]*	*IS[3]*	*GM[4]*
ERW, ESW, NSW, Reservoirs, Lakes[2]	*298*	*126*	*400*	*200*
All Other Waters	*410*	*-*	*400*	*200*
Secondary Contact[5]				
ERW, ESW, NSW, Reservoirs, Lakes[2]	*1490*	*630*	*2000*	*1000*
All Other Waters	*2050*	*-*	*2000*	*1000*

[1] May 1 to September 30
[2] Applicable at 1.0 meter depth in Reservoirs and Lakes
[3] For assessment of Individual Sample Criteria– at least eight (8) data points
[4] For calculation and assessment of Geometric Mean – calculated on a minimum of five (5) samples spaced evenly and within a thirty (30)-day period.
[5] October 1 to April 30

The Arkansas Department of Health has the responsibility of approving or disapproving surface waters for public water supply and of approving or disapproving the suitability of specifically delineated outdoor bathing places for body contact recreation, and it has issued rules and regulations pertaining to such uses.

ASSESSMENT METHODOLOGY FOR BACTERIA

In the absence of *Escherichia coli* (*E. coli)* bacteria data, fecal coliform bacteria data will be utilized.

For the assessment of ambient waters:

- Individual samples: per APC&EC Reg. 2.507, at least eight data points must be taken during the primary contact season (May 1 through September 30) or during the secondary contact season (October 1 through April 30) of contiguous months to make an evaluation.
- Geometric mean: calculated on a minimum of five samples spaced evenly and within any 30-day period during either the primary contact season (May 1 through September 30) or

during the secondary contact season (October 1 through April 30), when such data are available.

In either case, the most recent complete dataset (as described above) will be utilized for assessment evaluation.

LISTING METHODOLOGY:
Stream and river monitoring segments will be listed as non-support when the geometric mean for the applicable contact season is exceeded, or when the applicable standard is exceeded in greater than 25 percent of the samples collected during contiguous months within the applicable contact season (as described above).

DELISTING METHODOLOGY:

Stream and river monitoring segments will be listed as support when the geometric mean for the applicable contact season is not exceeded, or when the applicable standard is exceeded in 25 percent or less of the samples collected during contiguous months within the applicable contact season (as described above).

Table XIII. Statewide Bacteria Assessment Criteria

	Escherichia coli	STANDARD	SUPPORT	NON-SUPPORT
PRIMIMARY CONTACT	ERW, ESW, and NSW Waters	GM 126 col/100 mL*	≤ standard	> standard
	Lakes, Reservoirs	298 col/100 mL (May-Sept)	≤ 25% exceedance	>25% exceedance
	All other waters	410 col/100 mL (May-Sept)	≤ 25% exceedance	>25% exceedance
SECONDARY CONTACT	ERW, ESW, and NSW Waters	GM 630 col/100 mL*	≤ standard	> standard
	Lakes, Reservoirs	1490 col/100 mL (anytime)	≤ 25% exceedance	>25% exceedance
	All other waters	2050 col/100 mL (anytime)	≤ 25% exceedance	>25% exceedance
	FECAL COLIFORM	**STANDARD**	**SUPPORT**	**NON-SUPPORT**
	PRIMARY CONTACT	GM 200 col/100 mL*	≤ standard	> standard
	All Waters including ERW, ESW, NSW, Lakes, and Reservoirs	400 col/100 mL (May-Sept)	≤ 25% exceedance	>25% exceedance
	SECONDARY CONTACT	GM 1000 col/100 mL*	≤ standard	> standard
	All Waters including ERW, ESW, NSW, Lakes, and Reservoirs	2000 col/100 mL (anytime)	≤ 25% exceedance	>25% exceedance

ERW: Extraordinary Resource Water **NSW**: Natural and Scenic Waterway **ESW**: Ecologically Sensitive Water
*Geometric mean can be calculated for any 30-day period within a season (primary season May 1 through September 30; secondary season October 1 through April 30).

6.7 TOXIC SUBSTANCES

This section establishes the protocol for assessing impairment due to exceedance of limits for toxic substances, per APC&EC Reg. 2.508:

Toxic substances shall not be present in receiving waters, after mixing, in such quantities as to be toxic to human, animal, plant or aquatic life or to interfere with the normal propagation, growth and survival of the indigenous aquatic biota. Acute toxicity standards apply outside the zone of initial dilution. Within the zone of initial dilution acute toxicity standards may be exceeded but acute toxicity may not occur. Chronic toxicity and chronic numeric toxicity standards apply at, or beyond, the edge of the mixing zone. Permitting of all toxic substances shall be in accordance with the toxic implementation strategy found in the State of Arkansas Continuing Planning Process. For non-permit issues and as a guideline for evaluating toxic substances not listed in the following tables, the Department may consider No Observed Effect Concentrations or other literature values as appropriate. For the substances listed below, the following standards shall apply:

ALL WATERBODIES - AQUATIC LIFE CRITERIA

Substance	***Acute Values (µg/L)***	***Chronic Values (µg/L) (24-hr Average)***
PCBs		*0.0140*
Aldrin	*3.0*	
Dieldrin	*2.5*	*0.0019*
DDT (& metabolites)	*1.1*	*0.0010*
*Endrin**	*0.18*	*0.0023*
Toxaphene	*0.73*	*0.0002*
Chlordane	*2.4*	*0.0043*
*Endosulfan**	*0.22*	*0.056*
Heptachlor	*0.52*	*0.0038*
*Hexachlorocyclohexane**	*2.0*	*0.080*
Pentachlorophenol	$e^{[1.005(pH)-4.869]}$	$e^{[1.005(pH)-5.134]}$
Chlorpyrifos	*0.083*	*0.041*

** Total of all isomers*

DISSOLVED METALS*

Substance	***Acute Criteria (CMC) - µg/L(ppb)***		***Chronic Criteria (CCC) - µg/L(ppb)***	
	Formula X	***Conversion***	***Formula X***	***Conversion***
Cadmium	$e^{[1.128(\ln hardness)]-3.828}$	*(a)*	$e^{[0.7852(\ln hardness)]-3.490}$	*(c)*
Chromium(III)	$e^{[0.819(\ln hardness)]+3.688}$	*0.316*	$e^{[0.8190(\ln hardness)]+1.561}$	*0.860*
Chromium (VI)	*16*	*0.982*	*11*	*0.962*
Copper	$e^{[0..9422(\ln hardness)]-1.464}$	*0.960*	$e^{[0.8545(\ln hardness)]-1.465}$	*0.960*
Lead	$e^{[1.273(\ln hardness)]-1.460}$	*(b)*	$e^{[1.273(\ln hardness)]-4.705}$	*(b)*
Mercury	*2.4*	*0.85*	*0.012***	*NONE*
Nickel	$e^{[0.8460(\ln hardness)]+3.3612}$	*0.998*	$e^{[0.8460(\ln hardness)]+1.1645}$	*0.997*
*Selenium***	*20*	*NONE*	*5*	*NONE*
Silver	$e^{[1.72(\ln hardness)]-6.52}$	*0.85*	----------	*NONE*
Zinc	$e^{[0.8473(\ln hardness)]+0.8604}$	*0.978*	$e^{[0.8473(\ln hardness)]+0.7614}$	*0.986*
*Cyanide***	*22.36*	*NONE*	*5.2*	*NONE*

**These values may be adjusted by a site specific Water Effects Ratio (WER) as defined in 40 CFR Part 131.36 (c).*

(a) Calculated as: 1.136672 - [(ln hardness)(0.041838)]
(b) Calculated as: 1.46203 - [(ln hardness)(0.145712)]
(c) Calculated as: 1.101672 - [(ln hardness)(0.041838)]

***Expressed as total recoverable. Mercury based on bioaccumulation of residues in aquatic organisms, rather than toxicity.*

ALL WATERBODIES - HUMAN HEALTH CRITERIA

Substance	***Criteria (ng/L)****
Dioxin (2,3,7,8 TCDD)	*0.001*
Chlordane	*5.0*
PCBs (polychlorinated biphenyls)	*0.4*
alpha Hexachlorocyclohexane	*37.3*
Beryllium	*4000***
Dieldrin	*1.2*
Toxaphene	*6.3*

** Criteria based on a lifetime risk factor of 10^{-5}.*

***4000 ng/l is also represented as 4.0 ug/l, which is the Maximum contaminant level (MCL) under the EPA Safe Drinking Water Act [40 U.S.C. s/s 300f et seq. (1974)]*

The permittee shall have the option to develop site-specific numerical standards for toxic substances using United States Environmental Protection Agency approved bioassay methodology and guidance. Such guidance may include but may not be limited to Water Quality Standards Handbook; Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses *(August, 1994);* Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms *(EPA 600/4-90/027F. 5th ed. December 2002);* Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms *(EPA/600/4-91/002. 4th ed. October 2002) or most recent update thereof.*

Only ambient water quality data for dissolved metals generated or approved by ADEQ after March 1, 1993 will be considered in the documentation of background concentrations for the purpose of developing permit limitations.

ASSESSMENT METHODOLOGY FOR TOXIC SUBSTANCES

Metals toxicity will be evaluated based on instream hardness values at the time of sample collection. If the ambient hardness value is less than 25 mg/L, then a hardness value of 25 mg/L will be used to calculate metals toxicity.

LISTING METHODOLOGY:

Monitoring segments will be listed as non-support when more than one exceedance of the criterion occurs during the period of record. Samples collected at 1.0 meter below the surface of the water will be used to make lake and reservoir attainment decisions.

DELISTING METHODOLOGY:

Monitoring segments will be listed as support when there are one or fewer (≤ 1) exceedances of the criterion during the period of record. Samples collected at 1.0 meter below the surface of the water will be used to make lake and reservoir attainment decisions.

6.8 FISH CONSUMPTION

This section establishes the protocol for assessing impairment due to exceedance of limits for fish consumption, based on numeric criteria in APC&EC Reg. 2.508 and narrative criteria in APC&EC Reg. 2.409.

Fish consumption listings are determined in conjunction with the Arkansas Department of Health.

ASSESSMENT METHODOLOGY FOR FISH CONSUMPTION

LISTING METHODOLOGY:

Monitoring segments will be listed as non-support for fish consumption if a primary segment of the fish community (e.g., all predators or all largemouth bass) is recommended for *non-consumption* by *any user group* (e.g., general population or high risk groups).

DELISTING METHODOLOGY:

Monitoring segments will be listed as support if there are no fish consumption restrictions or only a *limited consumption* of fish recommended (e.g., no more than 2 meals per month or no consumption of fish over 15 inches).

6.9 NUTRIENTS

This section establishes the protocol for assessing impairment due to excess nutrients, per APC&EC Reg. 2.509:

> *(A)Materials stimulating algal growth shall not be present in concentrations sufficient to cause objectionable algal densities or other nuisance aquatic vegetation or otherwise impair any designated use of the waterbody. Impairment of a waterbody from excess nutrients is dependent on the natural waterbody characteristics such as stream flow, residence time, stream slope, substrate type, canopy, riparian vegetation, primary use of waterbody, season of the year and ecoregion water chemistry. Because nutrient water column concentrations do not always correlate directly with stream impairments, impairments will be assessed by a combination of factors such as water clarity, periphyton or phytoplankton production, dissolved oxygen values, dissolved oxygen saturation, diurnal dissolved oxygen fluctuations, pH values, aquatic-life community structure and possibly others. However, when excess nutrients result in an impairment, based upon Department assessment methodology, by any Arkansas established numeric water quality standard, the waterbody will be determined to be impaired by nutrients.*
>
> *(B)Site Specific Nutrient Standards*

Lake	*Chlorophyll a (ug/L)***	*Secchi Transparency (m)****
*Beaver Lake**	*8*	*1.1*

> **These standards are for measurement at the Hickory Creek site over the old thalweg, below the confluence of War Eagle Creek and the White River in Beaver Lake.*
> ***Growing season geometric mean (May - October)*
> ****Annual Average*

ASSESSMENT METHODOLOGY FOR NUTRIENTS

LISTING METHODOLOGY FOR WADEABLE STREAMS:

Wadeable stream and river monitoring segments will be listed as non-support for nutrients when the following conditions occur:

- The mean total phosphorus or total nitrogen concentration of the monitoring segment is greater than the 75th percentile of the total phosphorus or total nitrogen data from wadeable stream and river monitoring segments within an ecoregion, and
- When both of the 72-hour data sets indicate at least two of the four water quality translators as listed in the flow chart are exceeded, and
- One or both biological assemblages as listed in the flow chart are evaluated as impaired.

Water quality translators are dissolved oxygen fluctuation, dissolved oxygen concentrations, dissolved oxygen percent saturation, and pH. Two separate, 72-hour data sets within the same critical season (when water temperatures are greater than 22°C) are required for evaluation.

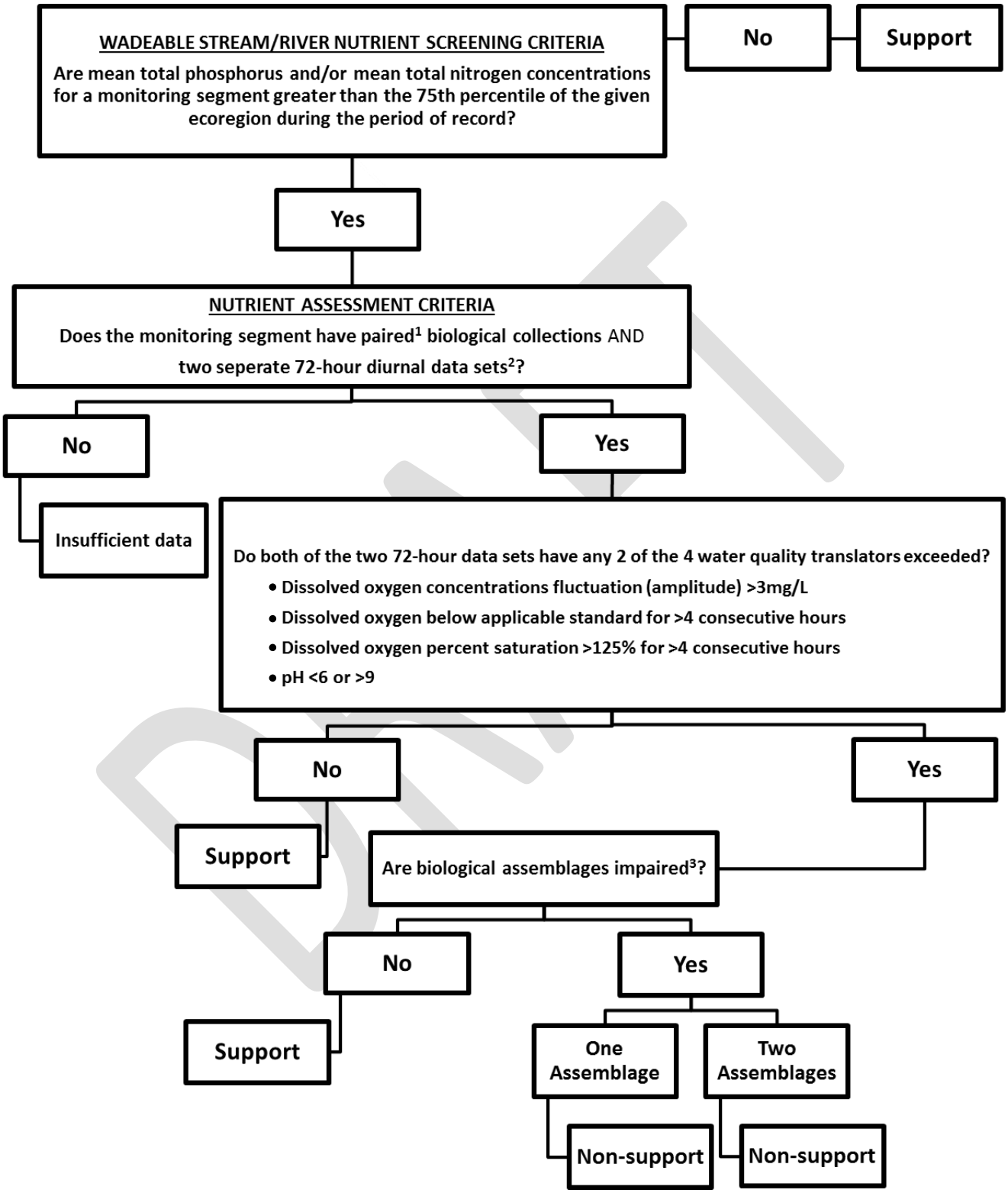
The dissolved oxygen fluctuation translator is considered exceeded when there is a greater than 3 mg/L fluctuation in concentration. The dissolved oxygen concentration translator is considered to be exceeded when dissolved oxygen concentration is below the applicable standard for greater than four consecutive hours. The dissolved oxygen saturation translator is considered exceeded when saturation is greater than 125% for four consecutive hours. The pH translator is considered to be exceeded when pH varies from the standard of between 6.0 and 9.0 standard units.

Any wadeable stream or river segment that exceeds screening level criteria, but lacks adequate data to assess will be placed into Category 3 (Insufficient Data). Category 3 streams will be prioritized based on the magnitude of nutrient concentration, available data, and staff resources.

DELISTING METHODOLOGY FOR WADEABLE STREAMS:

Wadeable stream and river monitoring segments will be listed as support for nutrients if there are fewer than two (<2) exceedances of nutrient translators for each 72-hour data set and biological assemblages are fully supported.

Table XIV. Nutrient Assessment Flowchart for Wadeable Streams and Rivers



[1]Paired data/ collections are defined as combined physical, chemical, and biological collections within the same calendar year and/or season.

[2] 72-hour diurnal dissolved oxygen deployments must occur during the same critical season (water temperature is >22° C).

[3]Section 5.1 discusses the determining factors for biological impairment.

LISTING METHODOLOGY FOR BEAVER LAKE:

The upper portion of Beaver Lake will be listed as non-support of its drinking water designated use when there are three or more (≥3) exceedances of the chlorophyll *a* criteria within the five-year period of record. Samples collected 1.0 meter below the surface of the water will be used to make lake and reservoir attainment decisions.

The upper portion of Beaver Lake will be listed as non-support of its drinking water designated use when there are three or more (≥3) exceedances of the secchi transparency criteria within the five-year period of record.

DELISTING METHODOLOGY FOR BEAVER LAKE:

The upper portion of Beaver Lake will be listed as supporting its drinking water designated use when there are no more than two (2) exceedances of the chlorophyll *a* criteria *and* no more than two (2) exceedances of the secchi transparency criteria within the five-year period of record. Samples collected 1.0 meter below the surface of the water will be used to make lake and reservoir attainment decisions for chlorophyll *a*.

6.10 MINERAL QUALITY

This section establishes the protocol for assessing impairment due to exceedance of limits for mineral quality. Assessment for mineral quality impairment in the State of Arkansas is written per APC&EC Reg. 2.511, Sections (A), (B), & (C):

(A) Site Specific Mineral Quality Criteria

Mineral quality shall not be altered by municipal, industrial, other waste discharges or instream activities so as to interfere with designated uses. The following criteria apply to the streams indicated.

(B) Ecoregion Reference Stream Minerals Values

The following values were determined from Arkansas' least-disturbed ecoregion reference streams are considered to be the maximum naturally occurring levels. For waterbodies not listed above, any discharge which results in instream concentrations more than 1/3 higher than these values for chlorides (Cl^-) and sulfates ($SO_4^{=2}$) or more than 15 mg/L, whichever is greater, is considered to be a significant modification of the maximum naturally occurring values. These waterbodies should be considered as candidates for site specific criteria development in accordance with Regs. 2.306 and 2.308. Similarly, site specific criteria development should be considered if the following TDS values are exceeded after being increased by the sum of the increases to Cl and SO_4. Such criteria may be developed only in accordance with Regs. 2.306 and 2.308. The values listed in the table below are not intended nor will these values be used by the Department to evaluate attainment of the water quality standards.

ECOREGION REFERENCE STREAM VALUES (mg/L)

Ecoregion	*Chlorides (Cl^-)*	*Sulfates (SO_4^2)*	*TDS*
Ozark Highlands	*13*	*17*	*240*
Boston Mountains	*13*	*9*	*85*
Arkansas River Valley	*10*	*13*	*103*
Ouachita Mountains	*6*	*15*	*128*
Gulf Coastal Plains	*14*	*31*	*123*
Delta	*36*	*28*	*390*

(C) Domestic Water Supply Criteria

In no case shall discharges cause concentrations in any waterbody to exceed 250, 250 and 500 mg/L of chlorides, sulfates and total dissolved solids, respectively, or cause concentrations to exceed the applicable criteria, except in accordance with Regs. 2.306 and 2.308. Lakes and reservoirs applicable at 1.0 meter depth.

ASSESSMENT METHODOLOGY FOR MINERAL QUALITY

Minerals standards are divided into two categories:

1) **Waters with site specific standards:** Assessed according to site specific values listed in APC&EC Reg. 2.511(A).
2) **Waters without site specific standards:** Assessed on the criteria of 250 mg/L for chlorides, 250 mg/L for sulfates, and 500 mg/L for total dissolved solids.

WATERS WITH SITE SPECIFIC STANDARDS LISTING METHODOLOGY:

Monitoring segments with site specific standards will be listed as non-support when greater than 25 percent of the total samples within the period of record exceed the applicable criteria, listed in APC&EC Reg. 2.511(A).

WATERS WITHOUT SITE SPECIFIC STANDARDS LISTING METHODOLOGY:

Monitoring segments without site specific standards will be listed as non-support when greater than 10 percent of the total samples within the period of record exceed the applicable criteria, listed in APC&EC Reg. 2.511(C).

WATERS WITH SITE SPECIFIC STANDARDS DELISTING METHODOLOGY:

Monitoring segments with site specific standards will be listed as support when 25 percent or less of the total samples within the period of record exceed the applicable criteria, listed in APC&EC Reg. 2.511(A).

WATERS WITHOUT SITE SPECIFIC STANDARDS DELISTING METHODOLOGY:

Monitoring segments without site specific standards will be listed as support when 10 percent or less of the total samples within the period of record exceed the applicable criteria, listed in APC&EC Reg. 2.511(C).

Statewide Minerals Assessment Criteria

Parameter	Standard	Support	Non-Support
Site Specific Standards (mg/L)	See Reg. 2.511(A)	≤ 25%	>25%
No Site Specific Standards (mg/L)	250/250/500	≤ 10%	>10%

For waterbodies without site specific standards, any discharge which results in instream concentrations more than 1/3 higher than the values found in Reg.2.511(B) for chlorides (Cl) and sulfates (SO_4) or more than 15 mg/L, whichever is greater, is considered to be a significant modification of the maximum naturally occurring values. These waterbodies should be considered as candidates for site specific criteria development in accordance with Regs. 2.306 and 2.308. Similarly, site specific criteria development should be considered if the following TDS values are exceeded after being increased by the sum of the increases to Cl and SO_4.

6.11 DOMESTIC, AGRICULTURAL, AND INDUSTRIAL WATER SUPPLY USES

This section establishes the protocol for assessing impairment due to exceedance of limits for domestic water supply designated uses, per APC&EC Reg. 2.511(C), and is written in accordance with the Federal Safe Drinking Water Act (40 § C.F.R 143.3).

> *(C) Domestic Water Supply Criteria*
>
> *In no case shall discharges cause concentrations in any waterbody to exceed 250, 250 and 500 mg/L of chlorides, sulfates and total dissolved solids, respectively, or cause concentrations to exceed the applicable criteria, except in accordance with Regs. 2.306 and 2.308. Lakes and reservoirs applicable at 1.0 meter depth.*

ASSESSMENT METHODOLOGY FOR DOMESTIC, AGRICULTURAL, AND INDUSTRIAL WATER SUPPLY USE

LISTING METHODOLOGY:

Monitoring segments will be listed as non-support when greater than 10 percent of the total samples within the period of record exceed the applicable criteria, listed in APC&EC Reg. 2.511(C).

DELISTING METHODOLOGY:

Monitoring segments will be listed as support when 10 percent or less of the total samples within the period of record exceed the applicable criteria, listed in APC&EC Reg. 2.511(C).

6.12 AMMONIA

This section establishes the protocol for determining impairment due to ammonia in Arkansas' surface waters, per APC&EC Reg. 2.512:

The total ammonia nitrogen (N) criteria and the frequency of occurrence are as follows:

(A)The one-hour average concentration of total ammonia nitrogen shall not exceed, more than once every three years on the average, the acute criterion as shown in the following table:

pH-Dependent Values of the CMC (Acute Criterion)- mg/L

pH	***Salmonids**** ***Present***	***Salmonids Absent***
6.5	*32.6*	*48.8*
6.6	*31.3*	*46.8*
6.7	*29.8*	*44.6*
6.8	*28.1*	*42.0*
6.9	*26.2*	*39.1*
7.0	*24.1*	*36.1*
7.1	*22.0*	*32.8*
7.2	*19.7*	*29.5*
7.3	*17.5*	*26.2*
7.4	*15.4*	*23.0*
7.5	*13.3*	*19.9*
7.6	*11.4*	*17.0*
7.7	*9.65*	*14.4*
7.8	*8.11*	*12.1*
7.9	*6.77*	*10.1*
8.0	*5.62*	*8.40*
8.1	*4.64*	*6.95*
8.2	*3.83*	*5.72*
8.3	*3.15*	*4.71*
8.4	*2.59*	*3.88*
8.5	*2.14*	*3.20*
8.6	*1.77*	*2.65*
8.7	*1.47*	*2.20*
8.8	*1.23*	*1.84*
8.9	*1.04*	*1.56*
9.0	*0.885*	*1.32*

** Family of fishes, which includes trout.*

(B) The thirty-day average concentration of total ammonia nitrogen shall not exceed those values shown as the chronic criterion in the following tables:

Temperature and pH-Dependent Values of the CCC (Chronic Criterion) for Fish Early Life Stages Present – mg/L

	Temperature °C									
pH	**0**	**14**	**16**	**18**	**20**	**22**	**24**	**26**	**28**	**30**
6.5	6.67	6.67	6.06	5.33	4.68	4.12	3.62	3.18	2.80	2.46
6.6	6.57	6.57	5.97	5.25	4.61	4.05	3.56	3.13	2.75	2.42
6.7	6.44	6.44	5.86	5.15	4.52	3.98	3.50	3.07	2.70	2.37
6.8	6.29	6.29	5.72	5.03	4.42	3.89	3.42	3.00	2.64	2.32
6.9	6.12	6.12	5.56	4.89	4.30	3.78	3.32	2.92	2.57	2.25
7.0	5.91	5.91	5.37	4.72	4.15	3.65	3.21	2.82	2.48	2.18
7.1	5.67	5.67	5.15	4.53	3.98	3.50	3.08	2.70	2.38	2.09
7.2	5.39	5.39	4.90	4.31	3.78	3.33	2.92	2.57	2.26	1.99
7.3	5.08	5.08	4.61	4.06	3.57	3.13	2.76	2.42	2.13	1.87
7.4	4.73	4.73	4.30	3.78	3.32	2.92	2.57	2.26	1.98	1.74
7.5	4.36	4.36	3.97	3.49	3.06	2.69	2.37	2.08	1.83	1.61
7.6	3.98	3.98	3.61	3.18	2.79	2.45	2.16	1.90	1.67	1.47
7.7	3.58	3.58	3.25	2.86	2.51	2.21	1.94	1.71	1.50	1.32
7.8	3.18	3.18	2.89	2.54	2.23	1.96	1.73	1.52	1.33	1.17
7.9	2.80	2.80	2.54	2.24	1.96	1.73	1.52	1.33	1.17	1.03
8.0	2.43	2.43	2.21	1.94	1.71	1.50	1.32	1.16	1.02	0.897
8.1	2.10	2.10	1.91	1.68	1.47	1.29	1.14	1.00	0.879	0.773
8.2	1.79	1.79	1.63	1.43	1.26	1.11	0.973	0.855	0.752	0.661
8.3	1.52	1.52	1.39	1.22	1.07	0.941	0.827	0.727	0.639	0.562
8.4	1.29	1.29	1.17	1.03	0.906	0.796	0.700	0.615	0.541	0.475
8.5	1.09	1.09	0.990	0.870	0.765	0.672	0.591	0.520	0.457	0.401
8.6	0.920	0.920	0.836	0.735	0.646	0.568	0.499	0.439	0.386	0.339
8.7	0.778	0.778	0.707	0.622	0.547	0.480	0.422	0.371	0.326	0.287
8.8	0.661	0.661	0.601	0.528	0.464	0.408	0.359	0.315	0.277	0.244
8.9	0.565	0.565	0.513	0.451	0.397	0.349	0.306	0.269	0.237	0.208
9.0	0.486	0.486	0.442	0.389	0.342	0.300	0.264	0.232	0.204	0.179

Temperature and pH-Dependent Values of the CCC (Chronic Criterion) for Fish Early Life Stages Absent – mg/L

	Temperature °C									
pH	***0-7***	***8***	***9***	***10***	***11***	***12***	***13***	***14***	***15****	***16****
6.5	*10.8*	*10.1*	*9.51*	*8.92*	*8.36*	*7.84*	*7.35*	*6.89*	*6.46*	*6.06*
6.6	*10.7*	*9.99*	*9.37*	*8.79*	*8.24*	*7.72*	*7.24*	*6.79*	*6.36*	*5.97*
6.7	*10.5*	*9.81*	*9.20*	*8.62*	*8.08*	*7.58*	*7.11*	*6.66*	*6.25*	*5.86*
6.8	*10.2*	*9.58*	*8.98*	*8.42*	*7.90*	*7.40*	*6.94*	*6.51*	*6.10*	*5.72*
6.9	*9.93*	*9.31*	*8.73*	*8.19*	*7.68*	*7.20*	*6.75*	*6.33*	*5.93*	*5.56*
7.0	*9.60*	*9.00*	*8.43*	*7.91*	*7.41*	*6.95*	*6.52*	*6.11*	*5.73*	*5.37*
7.1	*9.20*	*8.63*	*8.09*	*7.58*	*7.11*	*6.67*	*6.25*	*5.86*	*5.49*	*5.15*
7.2	*8.75*	*8.20*	*7.69*	*7.21*	*6.76*	*6.34*	*5.94*	*5.57*	*5.22*	*4.90*
7.3	*8.24*	*7.73*	*7.25*	*6.79*	*6.37*	*5.97*	*5.60*	*5.25*	*4.92*	*4.61*
7.4	*7.69*	*7.21*	*6.76*	*6.33*	*5.94*	*5.57*	*5.22*	*4.89*	*4.59*	*4.30*
7.5	*7.09*	*6.64*	*6.23*	*5.84*	*5.48*	*5.13*	*4.81*	*4.51*	*4.23*	*3.97*
7.6	*6.46*	*6.05*	*5.67*	*5.32*	*4.99*	*4.68*	*4.38*	*4.11*	*3.85*	*3.61*
7.7	*5.81*	*5.45*	*5.11*	*4.79*	*4.49*	*4.21*	*3.95*	*3.70*	*3.47*	*3.25*
7.8	*5.17*	*4.84*	*4.54*	*4.26*	*3.99*	*3.74*	*3.51*	*3.29*	*3.09*	*2.89*
7.9	*4.54*	*4.26*	*3.99*	*3.74*	*3.51*	*3.29*	*3.09*	*2.89*	*2.71*	*2.54*
8.0	*3.95*	*3.70*	*3.47*	*3.26*	*3.05*	*2.86*	*2.68*	*2.52*	*2.36*	*2.21*
8.1	*3.41*	*3.19*	*2.99*	*2.81*	*2.63*	*2.47*	*2.31*	*2.17*	*2.03*	*1.91*
8.2	*2.91*	*2.73*	*2.56*	*2.40*	*2.25*	*2.11*	*1.98*	*1.85*	*1.74*	*1.63*
8.3	*2.47*	*2.32*	*2.18*	*2.04*	*1.91*	*1.79*	*1.68*	*1.58*	*1.48*	*1.39*
8.4	*2.09*	*1.96*	*1.84*	*1.73*	*1.62*	*1.52*	*1.42*	*1.33*	*1.25*	*1.17*
8.5	*1.77*	*1.66*	*1.55*	*1.46*	*1.37*	*1.28*	*1.20*	*1.13*	*1.06*	*0.990*
8.6	*1.49*	*1.40*	*1.31*	*1.23*	*1.15*	*1.08*	*1.01*	*0.951*	*0.892*	*0.836*
8.7	*1.26*	*1.18*	*1.11*	*1.04*	*0.976*	*0.915*	*0.858*	*0.805*	*0.754*	*0.707*
8.8	*1.07*	*1.01*	*0.944*	*0.885*	*0.829*	*0.778*	*0.729*	*0.684*	*0.641*	*0.601*
8.9	*0.917*	*0.860*	*0.806*	*0.756*	*0.709*	*0.664*	*0.623*	*0.584*	*0.548*	*0.513*
9.0	*0.790*	*0.740*	*0.694*	*0.651*	*0.610*	*0.572*	*0.536*	*0.503*	*0.471*	*0.442*

**At 15° C and above, the criterion for fish Early Life Stage absent is the same as the criterion for fish Early Life Stage present.*

(C) The highest four-day average within a 30-day period should not exceed 2.5 times the chronic values shown above.

(D) For permitted discharges, the daily maximum or seven-day average permit limit shall be calculated using the four-day average value described above as an instream value, after mixing and based on a season when fish early life stages are present and a season when fish early life stages are absent. Temperature values used will be 14° C when fish early life stages are absent and the ecoregion temperature standard for the season when fish early life stages are present. The pH values will be the ecoregion mean value from least-disturbed stream data.

ASSESSMENT METHODOLOGY FOR AMMONIA:

Total ammonia nitrogen will be evaluated based on concurrently measured instream pH and temperature, as applicable, at the time of sample collection using APC&EC Reg. 2.512(A)–(D) standards. The Chronic Criterion for fish early life stages present apply during the critical season (April 1 thru October 31). The criterion shall be applied as 1) the arithmetic mean of the analytical results of consecutive-day samples when available, or 2) the result of individual grab samples. Samples collected 1.0 meter below the surface of the water will be used to make lake and reservoir attainment decisions.

LISTING METHODOLOGY:

Stream and river monitoring segments, as well as lakes and reservoirs, will be listed as non-support for ammonia toxicity standards:

I. If more than one violation of the 1-hour average concentration of total ammonia nitrogen exceeds the calculated acute criterion within the period of record; or

II. If the highest 4-day average within a 30-day period exceeds 2.5 times the chronic criterion; or

III. If the 30-day average concentration of total ammonia nitrogen exceeds the chronic criterion.

DELISTING METHODOLOGY:

Stream and river monitoring segments, as well as lakes and reservoirs, will be listed as support for ammonia toxicity standards:

I. If no more than one violation of the 1-hour average concentration of total ammonia nitrogen exceeds the calculated acute criterion within the period of record; or

II. If the highest 4-day average within a 30-day period does not exceed 2.5 times the chronic criterion; or

III. If the 30-day average concentration of total ammonia nitrogen does not exceed the chronic criterion.

APPENDIX A

ASSESSMENT CRITERIA FOR STREAMS IN THE ARKANSAS RIVER VALLEY ECOREGION

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]	31° C		≤10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primar	Critical
<10 mi^2	5	2	≤ 10%		>10%	
10-150 mi^2	5	3	≤ 10%		>10%	
151-400 mi^2	5	4	≤ 10%		>10%	
>400 mi^2	5	5	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
CL/SO_4/TDS[1]	250/250/500		≤ 10%		>10%	
TURBIDITY						
Base Flows	21 NTU		≤ 20%		>20%	
All Flows	40 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

ASSESSMENT CRITERIA FOR STREAMS IN THE BOSTON MOUNTAINS ECOREGION

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]	31° C		≤ 10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primar	Critical
<10 mi^2	6	2	≤ 10%		>10%	
> 10 mi^2	6	6	≤ 10%		>10%	
pH	6 to 9 standard pH		≤ 10%		>10%	
CL/SO_4/TDS[1]	250/250/500		≤ 10%		>10%	
TURBIDITY						
Base Flows	10 NTU		≤ 20%		>20%	
All Flows	19 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

ASSESSMENT CRITERIA FOR STREAMS IN THE DELTA ECOREGION (Channel Altered)

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]	32° C		≤10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
<10 mi^2	5	2	≤ 10%		>10%	
10-100 mi^2	5	3	≤ 10%		>10%	
>100 mi^2	5	5	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
CL/SO_4/TDS[1]	250/250/500		≤ 10%		>10%	
TURBIDITY						
Base Flows	75 NTU		≤ 20%		>20%	
All Flows	250 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

ASSESSMENT CRITERIA FOR STREAMS IN THE DELTA ECOREGION (Least Altered)

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]	30° C		≤ 10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
<10 mi^2	5	2	≤ 10%		>10%	
10-100 mi^2	5	3	≤ 10%		>10%	
>100 mi^2	5	5	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
CL/SO_4/TDS[1]	250/250/500		≤ 10%		>10%	
TURBIDITY						
Base Flows	45 NTU		≤ 20%		>20%	
All Flows	84 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

ASSESSMENT CRITERIA FOR STREAMS IN THE GULF COASTAL ECOREGION (Typical Streams)

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]	30° C		≤ 10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
<10 mi^2	5	2	≤ 10%		>10%	
10-500 mi^2	5	3	≤ 10%		>10%	
>500 mi^2	5	5	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
CL/SO_4/TDS[1]	250/250/500		≤ 10%		>10%	
TURBIDITY						
Base Flows	21 NTU		≤ 20%		>20%	
All Flows	32 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

ASSESSMENT CRITERIA FOR STREAMS IN THE GULF COASTAL ECOREGION (Spring water Influenced)

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]	30° C		≤ 10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
ALL WATERSHEDS	6	5	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
CL/SO_4/TDS[1]	250/250/500		≤ 10%		>10%	
TURBIDITY						
Base Flows	21 NTU		≤ 20%		>20%	
All Flows	32 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

ASSESSMENT CRITERIA FOR STREAMS IN THE OUACHITA MOUNTAINS ECOREGION STREAMS

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]	30° C		≤ 10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
<10 mi^2	6	2	≤ 10%		>10%	
>10 mi^2	6	6	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
CL/SO_4/TDS[1]	250/250/500		≤ 10%		>10%	
TURBIDITY						
Base Flows	10 NTU		≤ 20%		>20%	
All Flows	18 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

ASSESSMENT CRITERIA FOR STREAMS IN THE OZARK HIGHLANDS ECOREGION STREAMS

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]	29° C		≤ 10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
<10 mi^2	6	2	≤ 10%		>10%	
10-100 mi^2	6	5	≤ 10%		>10%	
> 100 mi^2	6	6	≤ 10%		>10%	
Trout Waters	6	6	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
CL/SO_4/TDS[1]	250/250/500		≤ 10%		>10%	
TURBIDITY						
Base Flows	10 NTU		≤ 20%		>20%	
All Flows	17 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

APPENDIX B

ASSESSMENT CRITERIA FOR LAKES

PARAMETER	STANDARD	SUPPORT	NON-SUPPORT
		DATA POINTS EXCEEDING CRITERIA	
TEMPERATURE[1]	32° C	≤ 10%	>10%
DISSOLVED OXYGEN[1] (mg/L)	5	≤ 10%	>10%
pH	6 to 9 standard pH units	≤ 10%	>10%
CL/SO_4/TDS[1]	250/250/500	≤ 10%	>10%
TURBIDITY			
Base Flows	25 NTU	≤ 20%	>20%
All Flows	45 NTU	≤ 25%	>25%

[1] Except for site specific standards approved in water quality standards.

APPENDIX C

ASSESSMENT CRITERIA FOR THE ARKANSAS RIVER

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]	32° C		≤ 10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
ALL WATERS	5	5	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
TURBIDITY						
Base Flows	50 NTU		≤ 20%		>20%	
All Flows	52 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

ASSESSMENT CRITERIA FOR THE MISSISSIPPI RIVER

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]	32° C		≤ 10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
ALL WATERS	5	5	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
TURBIDITY						
Base Flows	50 NTU		≤ 20%		>20%	
All Flows	75 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

ASSESSMENT CRITERIA FOR THE OUACHITA RIVER

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]						
L. MISSOURI TO S.LINE	32° C		≤ 10%		>10%	
ABOVE L. MISSOURI	30° C		≤ 10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
ALL WATERS	5	5	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
TURBIDITY						
Base Flows	21 NTU		≤ 20%		>20%	
All Flows	32 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

ASSESSMENT CRITERIA FOR THE RED RIVER

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]	32° C		≤ 10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
ALL WATERS	5	5	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
TURBIDITY						
Base Flows	50 NTU		≤ 20%		>20%	
All Flows	150 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

ASSESSMENT CRITERIA FOR ST. FRANCIS RIVER

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]	32° C		≤ 10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
ALL WATERS	5	5	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
TURBIDITY						
Base Flows	75 NTU		≤ 20%		>20%	
All Flows	100 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.

ASSESSMENT CRITERIA FOR WHITE RIVER (MAIN STEM)

PARAMETER	STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE[1]						
DAM #1 TO MOUTH	32° C		≤ 10%		>10%	
OZARK HIGHLANDS	29° C		≤ 10%		>10%	
TROUT WATERS	20° C		≤ 10%		>10%	
DISSOLVED OXYGEN[1] (mg/L)	Primary	Critical	Primary	Critical	Primary	Critical
DELTA	5	5	≤ 10%		>10%	
OZARK HIGHLANDS	6	6	≤ 10%		>10%	
TROUT WATERS	6	6	≤ 10%		>10%	
pH	6 to 9 standard pH units		≤ 10%		>10%	
TURBIDITY						
Base Flows - Delta	45 NTU		≤ 20%		>20%	
All Flows - Delta[2]	84 NTU		≤ 25%		>25%	
Base Flows - Ozark Highlands	10 NTU		≤ 20%		>20%	
All Flows - Ozark Highlands[2]	17 NTU		≤ 25%		>25%	

[1] Except for site specific standards approved in water quality standards.
[2] Criteria based on 90th percentile of ecoregion values.

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Category 5 Waters: Arkansas's Water Quality Limited Waterbodies (Streams) - 2016 303(d) list

STREAM NAME	HUC	RCH	COUNTY	PLNG SEG	MONITORING STATION	Designated Use Not Supported						Water Quality Standard Non-Attainment											SOURCE						Priority
						Fish Consumption	Fisheries	Primary Contact	Secondary Contact	Domestic Water Supply	Agriculture & Industry	Dissolved Oxygen	pH	Temperature	Turbidity	Chlorides	Sulfates	Total Dissolved Solids	Pathogens	Copper	Lead	Zinc	Other	Industrial Point Source	Municipal Point Source	Surface Erosion	Agriculture	Urban Runoff	Other	
Arkansas River	8020401	-001	Arkansas	3A	ARK0020							x																	Unknown	L
Wabbaseka Bayou	8020401	-003	Arkansas	3A	UWWSB01		x					x																	Unknown	L
Bayou Meto	8020402	-001	Arkansas	3B	e - ARK0023		x					x																	Unknown	L
Bayou Meto	8020402	-003	Arkansas	3B	ARK0023		x					x																	Unknown	L
Prairie Cypress	8020304	-014	Arkansas	4A	WHI0073							x																	Unknown	L
Prairie Cypress	8020304	-014	Arkansas	4A	WHI0073															x									Unknown	L
White River	8020303	-005	Arkansas	4A	WHI0036; WHI0086							x																	Unknown	L
Chemin-A-Haut Cr.	8040205	-907	Ashley	2B	OUA0012		x					x																	Unknown	L
Bearhouse Creek	8040205	-901	Ashley	2B	OUA0155		x					x																	Unknown	L
Overflow Creek	8040205	-908	Ashley	2B	OUA0012A		x								x											x				L
Overflow Creek	8040205	-908	Ashley	2B	OUA0012A		x									x										x				L
Hicks Creek	11010004	-015	Baxter	4F	WHI0065			x											x										Unknown	L
Illinois River	11110103	-020	Benton	3J	ARK0006; ILL0007											x	x												Unknown	L
Illinois River	11110103	-023	Benton	3J	ILL04			x											x									x			L
Sager Creek	11110103	-932	Benton	3J	ARK0005																		Nitrate		x					H
Crooked Creek	11010003	-049	Boone	4I	UWCKC01													x											Unknown	L
Crooked Creek	11010003	-949	Boone	4I	WHI0066; WHI0067													x											Unknown	L
Moro Creek	8040201	-001	Bradley	2D	OUA0028		x														x								Unknown	L
E. Two Bayou	8040201	-905	Calhoun	2D	OUA0052B			x					x																Unknown	L
E. Two Bayou	8040201	-905	Calhoun	2D	OUA0052B			x											x										Unknown	L
Moro Creek	8040201	-001	Calhoun	2D	OUA0028		x														x								Unknown	L
Kings River	11010001	-037	Carrol	4K	WHI0009A												x												Unknown	L
Kings River	11010001	-037	Carrol	4K	WHI0009A													x											Unknown	L
Bayou Macon	8050002	-003	Chicot	2A	UWBYM01											x													Unknown	L
Bayou Macon	8050002	-006	Chicot	2A	e-UWBYM01											x													Unknown	
Terre Noir Creek	8040103	-003	Clark	2G	UWTNO01								x																Unknown	L
Terre Noir Creek	8040103	-002	Clark	2G	UWTNR02								x																Unknown	L
Moro Creek	8040201	-001	Cleveland	2D	OUA0028		x														x								Unknown	L
Moro Creek	8040201	-901	Cleveland	2D	e - OUA0028		x														x								Unknown	L
Cadron Creek	11110205	-014	Cleveland	3D	ARK0164							x																	Unknown	L
N. Fork Cadron Creek	11110205	-015	Cleveland	3D	UWNCC02							x																	Unknown	L
Smackover Creek	8040201	-007	Columbia	2D	e - OUA0027																x								Unknown	L
Big Corney Creek	8040206	-015	Columbia	2E	OUA0002										x														Unknown	L
W. Fk.Point Remove	11110203	-017	Conway	3F	ANRC										x														Unknown	L
E. Fk Point Remove	11110203	-014	Conway	3F	ANRC										x														Unknown	L
Lost Creek Ditch	8020302	-909	Craighead	4B	WHI0172		x					x												x	x					L
Lost Creek Ditch	8020302	-909	Craighead	4B	WHI0172		x									x								x	x					L
Big Creek Ditch	8020302	-910	Craighead	4B	WHI0196		x													x									Unknown	L
L' Anguille River	8020205	-005	Craighead	5B	UWLGR02		x					x															x			L
L' Anguille River	8020205	-005	Craighead	5B	UWLGR02		x									x											x			L
L' Anguille River	8020205	-005	Craighead	5B	UWLGR02		x										x										x			L
L' Anguille River	8020205	-005	Craighead	5B	UWLGR02		x											x									x			L
Ten Mile Bayou	8020203	-906	Crittenden	5A	FRA0029		x					x																	Unknown	L
Tyronza River	8020203	-909	Crittenden	5A	FRA0032										x														Unknown	L
Bayou DeView	8020302	-006	Cross	4B	e - UWBDV02		x					x															x			L
Bayou DeView	8020302	-006	Cross	4B	e - UWBDV02		x										x										x			L
St. Francis River	8020203	-009	Cross	5A	e - FRA0013							x																	Unknown	L
St. Francis River	8020203	-009	Cross	5A	e - FRA0013											x													Unknown	L
St. Francis River	8020203	-008	Cross	5A	FRA0013							x															x			L
St. Francis River	8020203	-008	Cross	5A	FRA0013											x											x			L
Tyronza River	8020203	-909	Cross	5A	FRA0032										x														Unknown	L
Caney Creek	8020205	-901	Cross	5B	FRA0034							x													x				Unknown	L
Second Creek	8020205	-008	Cross	5B	FRA0012		x					x															x			L
L' Anguille River	8020205	-005	Cross	5B	UWLGR02		x					x															x			L
L' Anguille River	8020205	-005	Cross	5B	UWLGR02		x									x											x			L

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STREAM NAME	HUC	RCH	COUNTY	PLNG SEG	MONITORING STATION	Designated Use Not Supported						Water Quality Standard Non-Attainment											SOURCE						Priority
						Fish Consumption	Fisheries	Primary Contact	Secondary Contact	Domestic Water Supply	Agriculture & Industry	Dissolved Oxygen	pH	Temperature	Turbidity	Chlorides	Sulfates	Total Dissolved Solids	Pathogens	Copper	Lead	Zinc	Other	Industrial Point Source	Municipal Point Source	Surface Erosion	Agriculture	Urban Runoff	Other	
L' Anguille River	8020205	-005	Cross	5B	UWLGR02		x										x									x			L
L' Anguille River	8020205	-005	Cross	5B	UWLGR02		x											x									x			L
L' Anguille River	8020205	-004	Cross	5B	UWLGR01		x					x															x			L
L' Anguille River	8020205	-004	Cross	5B	UWLGR01		x									x											x			L
L' Anguille River	8020205	-004	Cross	5B	UWLGR01		x										x										x			L
L' Anguille River	8020205	-004	Cross	5B	UWLGR01		x											x									x			L
First Creek	8020205	-007	Cross	5B	FRA0030							x																	Unknown	L
Prairie Creek	8020205	-902	Cross	5B	FRA0035													x									x			L
Saline River	8040203	-007	Dallas	2C	OUA0042										x														Unknown	M
Moro Creek	8040201	-001	Dallas	2D	OUA0028		x														x								Unknown	L
Moro Creek	8040201	-901	Dallas	2D	e - OUA0028		x														x								Unknown	L
Arkansas River	8020401	-001	Desha	3A	ARK0020							x																	Unknown	L
Able's Creek	8040205	-911	Drew	2B	OUA0158										x														Unknown	L
Bearhouse Creek	8040205	-901	Drew	2B	OUA0155		x					x																	Unknown	L
Bayou Meto	8020402	-907	Faulkner	3B	ARK0060		x					x																	Unknown	L
Bayou Meto	8020402	-907	Faulkner	3B	ARK0060		x								x														Unknown	L
Cardron Creek, E Fk	11110205	-005	Faulkner	3D	ARK0163; UWEFC02							x																	Unknown	L
E. Fork Cadron Creek	11110205	-002	Faulkner	3D	ARK0158;							x														x				L
E. Fork Cadron Creek	11110205	-002	Faulkner	3D	ARK0158;										x											x				L
Stone Dam Creek	11110203	-904	Faulkner	3F	ARK0051							x						x											Unknown	L
Cove Creek	8040102	-976	Garland	2F	OUA0171C							x																	Unknown	H
Cove Creek	8040102	-976	Garland	2F	OUA0171C								x																Unknown	H
Wilson Creek	8040101	-901	Garland	2F	UAA												x												Unknown	H
Indian Springs Creek	8040101	-902	Garland	2F	OUA0184A; B; C; D; UAA							x																	Unknown	H
Indian Springs Creek	8040101	-902	Garland	2F	OUA0184A; B; C; D; UAA												x												Unknown	H
Indian Springs Creek	8040101	-902	Garland	2F	OUA0184A; B; C; D; UAA													x											Unknown	H
Saline River	8040203	-009	Grant	2C	e - OUA0042										x														Unknown	M
Saline River	8040203	-007	Grant	2C	OUA0042										x														Unknown	M
Big Creek Ditch	8020302	-910	Greene	4B	WHI0196		x													x									Unknown	L
Little Bodcau Creek	11140205	-010	Hempstead	1A	RED0056		x					x																	Unknown	L
Red River	11140201	-011	Hempstead	1B	RED0046						x				x												x			L
Bois D'Arc Creek	11140201	-008	Hempstead	1B	UWBDK02							x																	Unknown	L
Bois D'Arc Creek	11140201	-009	Hempstead	1B	UWBDK01							x																	Unknown	L
Chamberlain Creek	8040102	-971	Hot Spring	2F	OUA0104; OUA0171A		x						x										Toxicity	x					RE	H
Chamberlain Creek	8040102	-971	Hot Spring	2F	OUA0104; OUA0171A					x	x						x							x					RE	H
Chamberlain Creek	8040102	-971	Hot Spring	2F	OUA0104; OUA0171A					x	x							x						x					RE	H
Chamberlain Creek	8040102	-971	Hot Spring	2F	OUA0104; OUA0171A					x	x											x		x					RE	H
Chamberlain Creek	8040102	-970	Hot Spring	2F	Toxicity samples		x																Toxicity						RE	H
Lucinda Creek	8040102	-975	Hot Spring	2F	OUA0171B		x						x																RE	H
Cove Creek	8040102	-976	Hot Spring	2F	OUA0171C		x					x																	Unknown	H
Cove Creek	8040102	-976	Hot Spring	2F	OUA0171C		x						x																Unknown	H
Mine Creek	11140109	-033	Howard	1C	MIN0002												x							x						L
Mine Creek, upper	11140109	-934	Howard	1C	MIN0001; RED0048B													x						x						L
Holly Creek	11140109	-013	Howard	1C	RED0034B		x					x																	Unknown	
Departee Creek	11010013	-020	Independence	4C	UWDTC01		x					x															x			L
Departee Creek	11010013	-020	Independence	4C	UWDTC01		x									x											x			L
Departee Creek	11010013	-020	Independence	4C	UWDTC01		x															x					x			L
Glaise Creek	11010013	-021	Independence	4C	UWGSC01		x					x															x			L
Glaise Creek	11010013	-021	Independence	4C	UWGSC01		x															x					x			L

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STREAM NAME	HUC	RCH	COUNTY	PLNG SEG	MONITORING STATION	Designated Use Not Supported						Water Quality Standard Non-Attainment											SOURCE						Priority
						Fish Consumption	Fisheries	Primary Contact	Secondary Contact	Domestic Water Supply	Agriculture & Industry	Dissolved Oxygen	pH	Temperature	Turbidity	Chlorides	Sulfates	Total Dissolved Solids	Pathogens	Copper	Lead	Zinc	Other	Industrial Point Source	Municipal Point Source	Surface Erosion	Agriculture	Urban Runoff	Other	
Glaise Creek	11010013	-021	Independence	4C	UWGSC01		x					x															x			L
Glaise Creek	11010013	-021	Independence	4C	UWGSC01		x															x					x			L
Greenbrier Creek	11010004	-017	Independence	4F	WHI0167		x					x																	Unknown	L
Greenbrier Creek	11010004	-017	Independence	4F	WHI0167			x											x										Unknown	L
Bayou DeView (Cow Ditch)	8020302	-012	Jackson	4B	ANRC							x																	Unknown	L
Bayou DeView	8020302	-006	Jackson	4B	e - UWBDV02		x					x															x			L
Bayou DeView	8020302	-006	Jackson	4B	e - UWBDV02		x										x										x			L
Bayou DeView	8020302	-005	Jackson	4B	e - UWBDV02		x					x															x			L
Bayou DeView	8020302	-005	Jackson	4B	e - UWBDV02		x										x										x			L
Departee Creek	11010013	-020	Jackson	4C	UWDTC01		x					x															x			L
Departee Creek	11010013	-020	Jackson	4C	UWDTC01		x									x											x			L
Departee Creek	11010013	-020	Jackson	4C	UWDTC01		x															x					x			L
Village Creek	11010013	-008	Jackson	4C	e-UWVGC01							x																	Unknown	L
Village Creek	11010013	-007	Jackson	4C	e - UWVGC01; UWVGC03							x																	Unknown	L
Village Creek	11010013	-006	Jackson	4C	UWVGC01, UWVGC03							x																	Unknown	L
Main Street Ditch	8040205	-909	Jefferson	2B	OUA0146		x					x									x							x		L
Main Street Ditch	8040205	-909	Jefferson	2B	OUA0146			x											x									x		L
Harding Creek	8040205	-902	Jefferson	2B	OUA0145		x														x							x		L
Bayou Imbeau	8040205	-910	Jefferson	2B	OUA0147		x					x									x							x		L
Bayou Imbeau	8040205	-910	Jefferson	2B	OUA0147			x											x									x		L
Bayou Bartholomew	8040205	-006	Jefferson	2B	OUA0033																x								Unknown	L
Wabbaseka Bayou	8020401	-003	Jefferson	3A	UWWSB01		x					x																	Unknown	L
Bayou Meto	8020402	-003	Jefferson	3B	ARK0023		x					x																	Unknown	L
Little Bodcau Creek	11140205	-010	Lafayette	1A	RED0056		x					x																	Unknown	L
Village Creek	11010013	-014	Lawrence	4C	UWVGC02									x															Unknown	L
Big Creek	8020304	-010	Lee	4A	UWBGC03											x											x			L
Big Creek	8020304	-010	Lee	4A	UWBGC03													x									x			L
L' Anguille River	8020205	-002	Lee	5B	e - FRA0010		x					x															x			L
L' Anguille River	8020205	-002	Lee	5B	e - FRA0010		x									x											x			L
L' Anguille River	8020205	-002	Lee	5B	e - FRA0010		x											x									x			L
L' Anguille River	8020205	-001	Lee	5B	FRA0010		x					x															x			L
L' Anguille River	8020205	-001	Lee	5B	FRA0010		x									x											x			L
L' Anguille River	8020205	-001	Lee	5B	FRA0010		x											x									x			L
Able's Creek	8040205	-911	Lincoln	2B	OUA0158										x														Unknown	L
Bayou Bartholomew	8040205	-013	Lincoln	2B	UWBYB03							x															x			L
Cross Bayou	8040205	-905	Lincoln	2B	OUA0152							x																	Unknown	L
Red River	11140106	-025	Little River	1B	e - RED0025						x				x											x				L
Red River	11140106	-005	Little River	1B	RED0025						x				x											x				L
Red River	11140106	-003	Little River	1B	e - RED0025						x				x											x				L
Red River	11140106	-001	Little River	1B	e - RED0025						x				x											x				L
Little River	11140109	-001	Little River	1C	report									x															Unknown	L
Petit Jean River	11110204	-011	Logan	3G	ARK0034		x								x											X				L
Bayou Two Prairie	8040202	-006	Lonoke	3B	e - ARK0097							x																	Unknown	L
Bayou Two Prairie	8040202	-106	Lonoke	3B	e-ARK0097							x																	Unknown	L
Bayou Two Prairie	8040202	-206	Lonoke	3B	ARK0097							x																	Unknown	L
Bayou Two Prairie	8040202	-306	Lonoke	3B	e -ARK0097							x																	Unknown	L
Bayou Meto	8020402	-007	Lonoke	3B	ARK0050		x					x												x						H
Bayou Meto	8020402	-007	Lonoke	3B	ARK0050		x										x							x						H
Bayou Meto	8020402	-007	Lonoke	3B	ARK0050		x											x						x						H
Bayou Meto	8020402	-007	Lonoke	3B	ARK0050		x																Priority Organics	x						H
Wattensaw Bayou	8020301	-015	Lonoke	4D	WHI0072							x																	Unknown	L
Cypress Bayou	8020301	-010	Lonoke	4D	UWCPB01		x					x															x			L
Trib to Holman Creek	11010001	-959	Madison	4K	UAA													x						x	x					L
Holman Creek	11010001	-059	Madison	4K	WHI0070					x								x						x	x					L

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STREAM NAME	HUC	RCH	COUNTY	PLNG SEG	MONITORING STATION	Designated Use Not Supported						Water Quality Standard Non-Attainment											SOURCE						Priority
						Fish Consumption	Fisheries	Primary Contact	Secondary Contact	Domestic Water Supply	Agriculture & Industry	Dissolved Oxygen	pH	Temperature	Turbidity	Chlorides	Sulfates	Total Dissolved Solids	Pathogens	Copper	Lead	Zinc	Other	Industrial Point Source	Municipal Point Source	Surface Erosion	Agriculture	Urban Runoff	Other	
Crooked Creek	11010003	-949	Marion	4I	WHI0066; WHI0067													x											Unknown	L
Red River	11140201	-011	Miller	1B	RED0046						x				x											x				L
Little River, Left	8020204	-002	Mississippi	5C	e - FRA0037							x																	Unknown	L
Little River, Left	8020204	-002	Mississippi	5C	e - FRA0037							x																	Unknown	L
Big Creek	8020304	-010	Monroe	4A	UWBGC03											x											x			L
Big Creek	8020304	-010	Monroe	4A	UWBGC03													x									x			L
Boat Gunwale Slash	8020304	-914	Monroe	4A	WHI0074							x																	Unknown	L
Prairie Cypress	8020304	-014	Monroe	4A	WHI0073							x																	Unknown	L
Prairie Cypress	8020304	-014	Monroe	4A	WHI0073															x									Unknown	L
White River	8020303	-005	Monroe	4A	WHI0036; WHI0086							x																	Unknown	L
Cache River	8020302	-016	Monroe	4B	WHI0032		x					x									x						x			L
Bayou DeView	8020302	-002	Monroe	4B	WHI0033		x					x																	Unknown	L
Caney Creek	8020302	-903	Monroe	4B	ANRC							x																	Unknown	L
Smackover Creek	8040201	-007	Nevada	2D	e - OUA0027																x								Unknown	L
Terre Rouge Creek	8040103	-031	Nevada	2G	UWTRC01										x											x				L
Crooked Creek	11010003	-049	Newton	4I	UWCKC01													x											Unknown	L
Crooked Creek	11010003	-949	Newton	4I	WHI0066; WHI0067													x											Unknown	L
Smackover Creek	8040201	-007	Ouachita	2D	e - OUA0027																x								Unknown	L
Smackover Creek	8040201	-006	Ouachita	2D	OUA0027																x								Unknown	L
E. Two Bayou	8040201	-905	Ouachita	2D	OUA0052B			x					x																Unknown	L
E. Two Bayou	8040201	-905	Ouachita	2D	OUA0052B			x											x										Unknown	L
Fourche LaFave R.	11110206	-008	Perry	3E	UWFLR01							x																	Unknown	L
Fourche LaFave R.	11110206	-008	Perry	3E	UWFLR01								x																Unknown	L
Fourche LaFave R.	11110206	-008	Perry	3E	UWFLR01									x															Unknown	L
Fourche LaFave R.	11110206	-001	Perry	3E	ARK0036							x																	Unknown	L
S. Fourche LaFave R.	11110206	-014	Perry	3E	ARK0052							x																	Unknown	L
S. Fourche LaFave R.	11110206	-014	Perry	3E	ARK0052									x															Unknown	L
Bull Creek	8020301	-009	Perry	4D	UWBLB01		x					x															x			L
Bull Creek	8020301	-009	Perry	4D	UWBLB01		x															x					x			L
White River	8020303	-005	Phillips	4A	WHI0036; WHI0086							x																	Unknown	L
Bayou DeView	8020302	-007	Poinsett	4B	e - UWBDV02		x					x															x			L
Bayou DeView	8020302	-007	Poinsett	4B	e - UWBDV02		x										x										x			L
Bayou DeView	8020302	-006	Poinsett	4B	e - UWBDV02		x					x															x			L
Bayou DeView	8020302	-006	Poinsett	4B	e - UWBDV02		x										x										x			L
Tyronza River	8020203	-909	Poinsett	5A	FRA0032										x														Unknown	L
L' Anguille River	8020205	-005	Poinsett	5B	UWLGR02		x					x															x			L
L' Anguille River	8020205	-005	Poinsett	5B	UWLGR02		x									x											x			L
L' Anguille River	8020205	-005	Poinsett	5B	UWLGR02		x										x										x			L
L' Anguille River	8020205	-005	Poinsett	5B	UWLGR02		x											x									x			L
Little River, Left	8020204	-001	Poinsett	5C	FRA0037							x																	Unknown	L
Rolling Fork Creek below Tyson Grannis	11140109	-919	Polk	1C	RED0058												x													L
Rolling Fork Creek below Tyson Grannis	11140109	-919	Polk	1C	RED0058																			x						L
Mountain Fork	11140108	-014	Polk	1D	RED0001									x															Unknown	L
Mountain Fork	11140108	-014	Polk	1D	RED0001										x														Unknown	L
W. Fk.Point Remove	11110203	-017	Pope	3F	ANRC										x														Unknown	L
W. Fk. Point Remove	11110203	-016	Pope	3F	ANRC										x														Unknown	L
Whig Creek	11110203	-931	Pope	3F	ARK0067							x																	Unknown	L
Bayou Two Prairie	8040202	-006	Prairie	3B	e - ARK0097							x																	Unknown	L
Bayou Two Prairie	8040202	-106	Prairie	3B	e-ARK0097							x																	Unknown	L
Bayou Two Prairie	8040202	-206	Prairie	3B	ARK0097							x																	Unknown	L
Cache River	8020302	-016	Prairie	4B	WHI0032		x					x															x			L
Cache River	8020302	-016	Prairie	4B	WHI0032		x														x						x			L

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Category 5 Waters: Arkansas's Water Quality Limited Waterbodies (Streams) - 2016 303(d) list

STREAM NAME	HUC	RCH	COUNTY	PLNG SEG	MONITORING STATION	Designated Use Not Supported						Water Quality Standard Non-Attainment											SOURCE						Priority
						Fish Consumption	Fisheries	Primary Contact	Secondary Contact	Domestic Water Supply	Agriculture & Industry	Dissolved Oxygen	pH	Temperature	Turbidity	Chlorides	Sulfates	Total Dissolved Solids	Pathogens	Copper	Lead	Zinc	Other	Industrial Point Source	Municipal Point Source	Surface Erosion	Agriculture	Urban Runoff	Other	
Wattensaw Bayou	8020301	-015	Prairie	4D	WHI0072							x																	Unknown	L
Cypress Bayou	8020301	-010	Prairie	4D	UWCPB01		x					x															x			L
Bayou Des Arc	8020301	-006	Prairie	4D	WHI0056		x					x															x		Unknown	L
Bayou Des Arc	8020301	-006	Prairie	4D	WHI0056		x								x												x		Unknown	L
Bayou Two Prairie	8040202	-306	Pulaski	3B	e -ARK0097							x																	Unknown	L
Bayou Meto	8020402	-907	Pulaski	3B	ARK0060		x					x																	Unknown	L
Bayou Meto	8020402	-907	Pulaski	3B	ARK0060		x								x														Unknown	L
Bayou Meto	8020402	-007	Pulaski	3B	ARK0050		x					x												x						H
Bayou Meto	8020402	-007	Pulaski	3B	ARK0050		x										x							x						H
Bayou Meto	8020402	-007	Pulaski	3B	ARK0050		x											x						x						H
Bayou Meto	8020402	-007	Pulaski	3B	ARK0050		x																Priority Organics	x						H
Fourche Creek	11110207	-024	Pulaski	3C	ARK0130; ARK0159; ARK0147E, F, G, H							x																	Unknown	L
Fourche Creek	11110207	-022	Pulaski	3C	ARK0131; ARK0147A, B, C,							x														x				L
Fourche Creek	11110207	-022	Pulaski	3C	ARK0131; ARK0147A, B, C,									x												x				L
Fourche Creek	11110207	-022	Pulaski	3C	ARK0131; ARK0147A, B, C,										x											x				L
White Oak Bayou	11110207	-912	Pulaski	3C	ARK0162B							x																	Unknown	L
White Oak Bayou	11110207	-912	Pulaski	3C	ARK0162B								x																Unknown	L
White Oak Bayou	11110207	-912	Pulaski	3C	ARK0162B															x									Unknown	L
White Oak Bayou	11110207	-912	Pulaski	3C	ARK0162B																x								Unknown	L
Village Creek	11010013	-014	Randolph	4C	UWVGC02									x															Unknown	L
Fourche River	11010009	-008	Randolph	4G	WHI0170		x								x											x				L
Alum Fk. Saline River	8040203	-018	Saline	2C	USGS								x																Unknown	M
Cove Creek	8040102	-976	Saline	2F	OUA0171C							x																	Unknown	H
Cove Creek	8040102	-976	Saline	2F	OUA0171C								x																Unknown	H
Fourche Creek	11110207	-024	Saline	3C	ARK0130; ARK0159; ARK0147E, F, G,							x																	Unknown	L
Poteau River	11110105	-031	Scott	3I	ARK0055, UAA										x									x	x					M
Poteau River	11110105	-031	Scott	3I	ARK0055, UAA											x								x	x					M
Poteau River	11110105	-031	Scott	3I	ARK0055, UAA												x							x	x					M
Poteau River	11110105	-031	Scott	3I	ARK0055, UAA													x						x	x					M
Poteau River	11110105	-731	Scott	3I	ARK0054; ARK0100										x														Unknown	L
Unnamed Tributary to the Poteau River	11110105	-831	Scott	3I	UAA											x													Unknown	L
Unnamed Tributary to the Poteau River	11110105	-831	Scott	3I	UAA													x											Unknown	L
Bear Creek	11010005	-026	Searcy	4J	UWBRK01+					x								x							x				Unknown	L
Poteau River	11110105	-001	Sebastian	3I	ARK0014		x					x																	Unknown	L
Big Creek	8020304	-010	St. Francis	4A	UWBGC03											x											x			L
Big Creek	8020304	-010	St. Francis	4A	UWBGC03													x									x			L
St. Francis River	8020203	-008	St. Francis	5A	FRA0013							x															x			L
St. Francis River	8020203	-008	St. Francis	5A	FRA0013											x											x			L
Second Creek	8020205	-008	St. Francis	5B	FRA0012		x					x															x			L
L' Anguille River	8020205	-004	St. Francis	5B	UWLGR01		x					x															x			L
L' Anguille River	8020205	-004	St. Francis	5B	UWLGR01		x									x											x			L
L' Anguille River	8020205	-004	St. Francis	5B	UWLGR01		x										x										x			L
L' Anguille River	8020205	-004	St. Francis	5B	UWLGR01		x											x									x			L

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Category 5 Waters: Arkansas's Water Quality Limited Waterbodies (Streams) - 2016 303(d) list

STREAM NAME	HUC	RCH	COUNTY	PLNG SEG	MONITORING STATION	Designated Use Not Supported						Water Quality Standard Non-Attainment											SOURCE						Priority
						Fish Consumption	Fisheries	Primary Contact	Secondary Contact	Domestic Water Supply	Agriculture & Industry	Dissolved Oxygen	pH	Temperature	Turbidity	Chlorides	Sulfates	Total Dissolved Solids	Pathogens	Copper	Lead	Zinc	Other	Industrial Point Source	Municipal Point Source	Surface Erosion	Agriculture	Urban Runoff	Other	
First Creek	8020205	-007	St. Francis	5B	FRA0030							x																	Unknown	L
L' Anguille River	8020205	-003	St. Francis	5B	e- FRA0010		x					x															x			L
L' Anguille River	8020205	-003	St. Francis	5B	e- FRA0010		x									x											x			L
L' Anguille River	8020205	-003	St. Francis	5B	e- FRA0010		x											x									x			L
L' Anguille River	8020205	-002	St. Francis	5B	e - FRA0010		x					x															x			L
L' Anguille River	8020205	-002	St. Francis	5B	e - FRA0010		x									x											x			L
L' Anguille River	8020205	-002	St. Francis	5B	e - FRA0010		x											x									x			L
Smackover Creek	8040201	-007	Union	2D	e - OUA0027																x								Unknown	L
Smackover Creek	8040201	-006	Union	2D	OUA0027																x								Unknown	L
Salt Creek	8040201	-806	Union	2D	OUA0137D		x						x																Unknown	H
Elcc Tributary	8040201	-606	Union	2D	OUA0137E		x						x							x			Nitrate	x						H
Elcc Tributary	8040201	-606	Union	2D	OUA0137E		x																	x						H
Elcc Tributary	8040201	-606	Union	2D	OUA0137E		x																Nitrate	x						H
Bayou De L'outre	8040202	-008	Union	2D	e-OUA0005, UAA		x					x											Selenium	x						H
Bayou De L'outre	8040202	-008	Union	2D	e-OUA0005, UAA					x							x						Selenium	x						H
Bayou De L'outre	8040202	-008	Union	2D	e-OUA0005, UAA					x								x					Selenium	x						H
Bayou De L'outre	8040202	-008	Union	2D	e-OUA0005, UAA		x														x		Selenium	x						H
Bayou De L'outre	8040202	-008	Union	2D	e-OUA0005, UAA		x															x	Selenium	x						H
Bayou De L'outre	8040202	-007	Union	2D	e-OUA0005		x					x												x						H
Bayou De L'outre	8040202	-007	Union	2D	e-OUA0005					x							x							x						H
Bayou De L'outre	8040202	-007	Union	2D	e-OUA0005					x								x						x						H
Bayou De L'outre	8040202	-007	Union	2D	e-OUA0005		x														x			x						H
Bayou De L'outre	8040202	-007	Union	2D	e-OUA0005		x															x		x						H
Bayou De L'outre	8040202	-006	Union	2D	OUA0005		x					x												x						H
Bayou De L'outre	8040202	-006	Union	2D	OUA0005					x							x							x						H
Bayou De L'outre	8040202	-006	Union	2D	OUA0005					x								x						x						H
Bayou De L'outre	8040202	-006	Union	2D	OUA0005		x														x			x						H
Bayou De L'outre	8040202	-006	Union	2D	OUA0005		x															x		x						H
Loutre Creek	8040202	-909	Union	2D	OUA0138; UAA					x						x								x						H
Loutre Creek	8040202	-909	Union	2D	OUA0138; UAA					x							x							x						H
Loutre Creek	8040202	-909	Union	2D	OUA0138; UAA					x								x						x						H
Loutre Creek	8040202	-909	Union	2D	OUA0138; UAA		x																Selenium	x						H
Big Corney Creek	8040206	-015	Union	2E	OUA0002										x														Unknown	L
Cadron Creek	11110205	-014	Van Buren	3D	ARK0164							x																	Unknown	L
N. Fork Cadron Creek	11110205	-015	Van Buren	3D	UWNCC02							x																	Unknown	L
E. Fk Point Remove	11110203	-014	Van Buren	3F	ANRC										x														Unknown	L
Bear Creek	11010005	-026	Van Buren	4J	UWBRK01+					x								x							x					L
Illinois River	11110103	-023	Washington	3J	ILL04			x											x								x			L
Muddy Fork Illinois River	11110103	-025	Washington	3J	MFI0004			x											x								x			L
Moores Creek	11110103	-026	Washington	3J	ARK0096												x												Unknown	L
Moores Creek	11110103	-026	Washington	3J	ARK0096														x										Unknown	L
Muddy Creek	11110103	-027	Washington	3J	MFI002B												x												Unknown	L
Muddy Creek	11110103	-027	Washington	3J	MFI002B														x										Unknown	L
Illinois River	11110103	-024	Washington	3J	ARK0040			x								x											x			L
Illinois River	11110103	-024	Washington	3J	ARK0040			x									x										x			L
Illinois River	11110103	-024	Washington	3J	ARK0040			x											x								x			L
White River	11010001	-023	Washington	4K	WHI0052, BWD, UAA												x												Unknown	L
White River	11010001	-023	Washington	4K	WHI0052, BWD,													x											Unknown	L
West Fork	11010001	-024	Washington	4K	WHI0051, UAA		x										x												Unknown	L
West Fork	11010001	-024	Washington	4K	WHI0051, UAA		x											x											Unknown	L
Cardron Creek, E Fk	11110205	-005	White	3D	ARK0163; UWEFC02							x																	Unknown	L
Departee Creek	11010013	-020	White	4C	UWDTC01		x					x															x			L
Departee Creek	11010013	-020	White	4C	UWDTC01		x									x											x			L
Departee Creek	11010013	-020	White	4C	UWDTC01		x															x					x			L
Cypress Bayou	8020301	-010	White	4D	UWCPB01		x					x															x			L
Bull Creek	8020301	-009	White	4D	UWBLB01		x					x															x			L

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Category 5 Waters: Arkansas's Water Quality Limited Waterbodies (Streams) - 2016 303(d) list

STREAM NAME	HUC	RCH	COUNTY	PLNG SEG	MONITORING STATION	Designated Use Not Supported						Water Quality Standard Non-Attainment											SOURCE						Priority
						Fish Consumption	Fisheries	Primary Contact	Secondary Contact	Domestic Water Supply	Agriculture & Industry	Dissolved Oxygen	pH	Temperature	Turbidity	Chlorides	Sulfates	Total Dissolved Solids	Pathogens	Copper	Lead	Zinc	Other	Industrial Point Source	Municipal Point Source	Surface Erosion	Agriculture	Urban Runoff	Other	
Bull Creek	8020301	-009	White	4D	UWBLB01		x															x					x			L
Bayou Des Arc	8020301	-007	White	4D	UWBDA01		x					x															x			L
Bayou Des Arc	8020301	-006	White	4D	WHI0056		x					x																	Unknown	L
Bayou Des Arc	8020301	-006	White	4D	WHI0056		x								x												x			L
Big Creek	8020304	-010	Woodruff	4A	UWBGC03											x											x			L
Big Creek	8020304	-010	Woodruff	4A	UWBGC03													x									x			L
Bayou DeView	8020302	-005	Woodruff	4B	e - UWBDV02		x					x															x			L
Bayou DeView	8020302	-005	Woodruff	4B	e - UWBDV02		x										x										x			L
Bayou DeView	8020302	-004	Woodruff	4B	UWBDV02		x					x															x			L
Bayou DeView	8020302	-004	Woodruff	4B	UWBDV02		x										x										x			L
Buffalo Creek	8020302	-014	Woodruff	4B	ANRC							x																	Unknown	L
Caney Creek	8020302	-903	Woodruff	4B	ANRC							x																	Unknown	L
Second Creek	8020205	-008	Woodruff	5B	FRA0012		x					x															x			L
S. Fourche LaFave R.	11110206	-014	Yell	3E	ARK0052							x																	Unknown	L
S. Fourche LaFave R.	11110206	-014	Yell	3E	ARK0052									x															Unknown	L
Chickalah Creek	11110204	-002	Yell	3G	ARK0058							x																	Unknown	L

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Category 5 Waters: Arkansas's Water Quality Limited Waterbodies (Lakes) - 2016 303(d) list

LAKE NAME	HUC	County	Acres	MONITORING STATION	Designated Use Not Supported						Water Quality Standard Non-Attainment											SOURCE						Priority
					Fish Consumption	Fisheries	Primary Contact	Secondary Contact	Domestic Water Supply	Agriculture & Industry	Dissolved Oxygen	pH	Temperature	Turbidity	Chlorides	Sulfates	Total Dissolved Solids	Pathogens	Copper	Lead	Zinc	Other	Industrial Point Source	Municipal Point Source	Surface Erosion	Agriculture	Urban Runoff	Unknown	
Rodgers	8020402	Arkansas	560	LARK027A							x																	x	L
Swepco	11110103	Benton	531	LARK009A		x																Unknown						x	L
Cox Creek	8040203	Grant	300	LOUA021A								x																x	L
Frierson	8020302	Greene	335	LWHI002A		x													x									x	L
Saracen	11110207	Jefferson	500	LARK026A	x																	PCB	x						L
Blue Mountian	11110204	Logan	2910	LARK028A+B		x								x											x				L
Pickthorne	8020402	Lonoke	350	Ark G&F		x																Unknown						x	
Beaver - Upper	1101001	Washington	1500	LWHI013B			x											x							x				H
Blue Mountian	11110204	Yell	2910	LARK028A+B		x								x											x				L

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Category 4a Waters: Impaired Waterbodies (Streams) With Completed TMDLs

STREAM NAME	HUC	RCH	COUNTY	PLNG SEG	MONITORING STATION	Designated Use Not Supported						Water Quality Standard Non-Attainment													SOURCE					
						Fish Consumption	Fisheries	Primary Contact	Secondary Contact	Domestic Water Supply	Agriculture & Industry	Dissolved Oxygen	pH	Temperature	Turbidity	Chlorides	Sulfates	Total Dissolved Solids	Pathogens	Copper	Lead	Zinc	Mercury	Other	Other	Industrial Point Source	Municipal Point Source	Surface Erosion	Agriculture	Urban Runoff	Other
Wabbaseka Bayou	8020401	-003	Arkansas	3A	UWWSB01										4A																
Bayou Bartholomew	8040205	-001	Ashley	2B	OUA0013		x								4A														x		
Bayou Bartholomew	8040205	-002	Ashley	2B	UWBYB01	x																	4A						x		Unknown
Bayou Bartholomew	8040205	-002	Ashley	2B	UWBYB01		x								4A	4A	4A	4A												x		Unknown
Cutoff Creek	8040205	-007	Ashley	2B	UWCOC01	x																	4A								Unknown
Cutoff Creek	8040205	-007	Ashley	2B	UWCOC01										4A														x		Unknown
Bayou Bartholomew	8040205	-912	Ashley	2B	UWBYB02		x								4A	4A	4A	4A												x		
Chemin-A-Haut Cr.	8040205	-907	Ashley	2B	OUA0012			x											4A												Unknown
Bearhouse Creek	8040205	-901	Ashley	2B	OUA0155			x											4A												
Saline River	8040204	-001	Ashley	2C	e	x																	4A								Unknown
Saline River	8040204	-002	Ashley	2C	e	x																	4A								Unknown
Hicks Creek	1.1E+07	-015	Baxter	4F	WHI0065			x																Nitrate					x			
Town Branch	1.1E+07	-903	Benton	3J	ARK0056; UWTBC01																			Total Phosphorus							
Saline River	8040204	-001	Bradley	2C	e	x																	4A								Unknown
Saline River	8040204	-002	Bradley	2C	e	x																	4A								Unknown
Saline River	8040204	-004	Bradley	2C	e	x																									Unknown
Moro Creek	8040201	-001	Bradley	2D	OUA0028	x																	4A						x		Unknown
Moro Creek	8040201	-001	Bradley	2D	OUA0028										4A														x		Unknown
Moro Creek	8040201	-001	Calhoun	2D	OUA0028	x																	4A						x		Unknown
Moro Creek	8040201	-001	Calhoun	2D	OUA0028										4A														x		Unknown
Ouachita River	8040201	-002	Calhoun	2D	OUA008B	x																	4A								Unknown
Ouachita River	8040201	-004	Calhoun	2D	OUA0037	x																	4A								Unknown
L. Champagnolle Cr.	8040201	-903	Calhoun	2D	e	x																									Unknown
Champagnolle	8040201	-003	Calhoun	2D	UWCHC01	x																	4A								Unknown
Osage Creek Near Berryville	1.1E+07	-945	Carroll	4K	BUFET008; WHI0065; WHI0069; WHI0130																			Total Phosphorus							
Boeuf River	8050001	-018	Chicot	2A	OUA0015A		x								4A														x		
Boeuf River	8050001	-018	Chicot	2A	OUA0015A						x					4A	4A												x		
Boeuf River	8050001	-019	Chicot	2A	UWBFR01		x								4A														x		
Boeuf River	8050001	-019	Chicot	2A	UWBFR01					x						4A	4A	4A											x		
Boeuf River	8050001	-019	Chicot	2A	UWBFR01						x					4A	4A	4A											x		
Bayou Bartholomew	8040205	-912	Chicot	2B	UWBYB02		x								4A	4A	4A	4A											x		
M. Fk. Little Red	1.1E+07	-027	Cleburne	4E	WHI0043			x											4A												Unknown
Little Red River	1.1E+07	-012	Cleburne	4E	e - WHI0059			x											4A												
Saline River	8040203	-001	Cleveland	2C	OUA0010A,117	x																	4A								Unknown
Saline River	8040204	-002	Cleveland	2C	e	x																	4A								Unknown
Saline River	8040204	-004	Cleveland	2C	e	x																	4A								Unknown
Big Creek	8040204	-005	Cleveland	2C	OUA0043										4A														x		
Saline River	8040204	-006	Cleveland	2C	OUA0118	x																	4A								Unknown
Moro Creek	8040201	-001	Cleveland	2D	OUA0028	x																	4A						x		Unknown
Moro Creek	8040201	-001	Cleveland	2D	OUA0028										4A														x		Unknown
Moro Creek	8040201	-901	Cleveland	2D	e - OUA0028										4A														x		
Dorcheat Bayou	1.1E+07	-022	Columbia	1A	RED0015A	x																	4A								Unknown
Dorcheat Bayou	1.1E+07	-022	Columbia	1A	RED0015A																4A										Unknown
Dorcheat Bayou	1.1E+07	-020	Columbia	1A	e - RED0015A	x																	4A								Unknown
Dorcheat Bayou	1.1E+07	-020	Columbia	1A	e - RED0015A																4A										Unknown

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STREAM NAME	HUC	RCH	COUNTY	PLNG SEG	MONITORING STATION	Designated Use Not Supported						Water Quality Standard Non-Attainment														SOURCE					
						Fish Consumption	Fisheries	Primary Contact	Secondary Contact	Domestic Water Supply	Agriculture & Industry	Dissolved Oxygen	pH	Temperature	Turbidity	Chlorides	Sulfates	Total Dissolved Solids	Pathogens	Copper	Lead	Zinc	Mercury	Other	Other	Industrial Point Source	Municipal Point Source	Surface Erosion	Agriculture	Urban Runoff	Other
Dorcheat Bayou	1.1E+07	-026	Columbia	1A	UWBDT01,02	x																	4A								
Dorcheat Bayou	1.1E+07	-026	Columbia	1A	UWBDT01,02								4A								4A										Unknown
Dorcheat Bayou	1.1E+07	-024	Columbia	1A	RED0065	x																	4A								
Dorcheat Bayou	1.1E+07	-024	Columbia	1A	RED0065								4A																		Unknown
Beech Creek	1.1E+07	-025	Columbia	1A	UWBCH01							4A			4A						4A										
Big Creek	1.1E+07	-923	Columbia	1A	UWBIG01								4A								4A										
Big Creek	1.1E+07	-023	Columbia	1A	UWBIG02											4A	4A	4A			4A										Unknown
Horsehead Creek	1.1E+07	-021	Columbia	1A	UWHHC01								4A								4A										
Cadron Creek	1.1E+07	-011	Conway	3D	UWCCR01										4A																
Cadron Creek	1.1E+07	-012	Conway	3D	UWCCR01										4A																
Bayou DeView	8020302	-009	Craighead	4B	WHI0026										4A																
L'Anguille River	8020205	-005	Craighead	5B	UWLGR02		x								4A														x		
L'Anguille River	8020205	-005	Craighead	5B	UWLGR02			x											4A										x		
Tyrnoza River	8020203	-909	Crittenden	5A	e-FRA0033										4A																
L'Anguille River	8020205	-004	Cross	5B	UWLGR01			x											4A										x		
L'Anguille River	8020205	-005	Cross	5B	UWLGR02		x								4A														x		
L'Anguille River	8020205	-005	Cross	5B	UWLGR02			x											4A										x		
Moro Creek	8040201	-001	Dallas	2D	OUA0028	x																	4A					x			Unknown
Moro Creek	8040201	-001	Dallas	2D	OUA0028										4A													x			Unknown
Moro Creek	8040201	-901	Dallas	2D	e - OUA0028										4A													x			
Oak Log Bayou	8050002	-910	Desha	2A	OUA0179		x								4A														x		
Oak Log Bayou	8050002	-910	Desha	2A	OUA0179					x	x							4A											x		
Bayou Bartholomew	8040205	-912	Desha	2B	UWBYB02		x								4A	4A	4A	4A											x		
Bayou Bartholomew	8040205	-012	Desha	2B	UWBYB02	x																	4A						x		Unknown
Bayou Bartholomew	8040205	-012	Desha	2B	UWBYB02		x								4A														x		Unknown
Bayou Bartholomew	8040205	-013	Lincoln	2B	UWBYB03		x								4A														x		
Bayou Bartholomew	8040205	-013	Lincoln	2B	UWBYB03			x											4A										x		
Cutoff Creek	8040205	-007	Drew	2B	UWCOC01	x																	4A								Unknown
Cutoff Creek	8040205	-007	Drew	2B	UWCOC01										4A													x			Unknown
Bayou Bartholomew	8040205	-912	Drew	2B	UWBYB02		x								4A	4A	4A	4A											x		
Bayou Bartholomew	8040205	-012	Drew	2B	UWBYB02	x																	4A						x		Unknown
Bayou Bartholomew	8040205	-012	Drew	2B	UWBYB02		x								4A														x		Unknown
Bearhouse Creek	8040205	-901	Drew	2B	OUA0155			x											4A												
Cadron Creek	1.1E+07	-011	Faulkner	3D	UWCCR01										4A																
Cadron Creek	1.1E+07	-012	Faulkner	3D	UWCCR01										4A																
Stone Dam Creek	1.1E+07	-904	Faulkner	3F	ARK0051		x																	Ammonia	Nitrate		x				
Stone Dam Creek	1.1E+07	-904	Faulkner	3F	ARK0051					x														Ammonia	Nitrate		x				
Cypress Bayou	8020301	-012	Faulkner	4D	e - UWCPB02			x											4A												
Mulberry River	1.1E+07	-007	Franklin	3H	ARK0061								4A																		
Mulberry River	1.1E+07	-008	Franklin	3H	ARK0139								4A																		
Strawberry River	1.1E+07	-011	Fulton	4G	UWSBR01		x								4A														x		
Strawberry River	1.1E+07	-011	Fulton	4G	UWSBR01			x											4A										x		
L. Strawberry River	1.1E+07	-010	Fulton	4G	WHI0143H+			x											4A										x		
Big Creek	8040203	-904	Grant	2C	OUA0018		x								4A													x			
Cache River Ditch	8020302	-032	Greene	4B	e - UWCHR04		x								4A														x		
Cache River	8020302	-031	Greene	4B	e - UWCHR04		x								4A														x		
Cache River	8020302	-029	Greene	4B	e - UWCHR04		x								4A														x		
Cache River	8020302	-028	Greene	4B	UWCHR04		x								4A														x		

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STREAM NAME	HUC	RCH	COUNTY	PLNG SEG	MONITORING STATION	Designated Use Not Supported						Water Quality Standard Non-Attainment													SOURCE					
						Fish Consumption	Fisheries	Primary Contact	Secondary Contact	Domestic Water Supply	Agriculture & Industry	Dissolved Oxygen	pH	Temperature	Turbidity	Chlorides	Sulfates	Total Dissolved Solids	Pathogens	Copper	Lead	Zinc	Mercury	Other	Other	Industrial Point Source	Municipal Point Source	Surface Erosion	Agriculture	Urban Runoff	Other
Cache River	8020302	-027	Greene	4B	e - UWCHR04		x								4A														x		
Little Bodcau Creek	1.1E+07	-010	Hempstead	1A	RED0056																4A										
Bodcau Creek	1.1E+07	-007	Hempstead	1A	RED0057																4A										
Red River	1.1E+07	-011	Hempstead	1B	RED0046													4A													
Red River	1.1E+07	-007	Hempstead	1B	RED0045										4A			4A													
Holly Creek	1.1E+07	-013	Howard	1C	RED0034B			x											4A												
Mine Creek	1.1E+07	-033	Howard	1C	MIN0002			x											4A												
Ten Mile Creek	1.1E+07	-009	Independenc	4E	UWTMC01			x							4A				4A												
Dota Creek	1.1E+07	-902	Independenc	4G	WHI0165			x											4A												
Strawberry River	1.1E+07	-011	Izard	4G	UWSBR01		x								4A													x			
Strawberry River	1.1E+07	-011	Izard	4G	UWSBR01			x											4A									x			
L. Strawberry River	1.1E+07	-010	Izard	4G	WHI0143H+			x											4A									x			
Village Creek	1.1E+07	-006	Jackson	4C	UWVGC01, UWVGC03										4A																
Village Creek	1.1E+07	-007	Jackson	4C	e										4A																
Village Creek	1.1E+07	-008	Jackson	4C	e										4A																
Village Creek	1.1E+07	-012	Jackson	4C	e										4A																
Harding Creek	8040205	-902	Jefferson	2B	OUA0145			x											4A										x	x	
Deep Bayou	8040205	-005	Jefferson	2B	OUA0151		x								4A													x	x		Unknown
Deep Bayou	8040205	-005	Jefferson	2B	OUA0151			x											4A									x	x		Unknown
Bayou Bartholomew	8040205	-006	Jefferson	2B	OUA0033		x								4A														x		
Jack's Bayou	8040205	-904	Jefferson	2B	OUA0150			x											4A												
Big Creek	8040204	-005	Jefferson	2C	OUA0043										4A													x			
Wabbaseka Bayou	8020401	-003	Jefferson	3A	UWWSB01										4A																
Mulberry River	1.1E+07	-008	Johnson	3H	ARK0139								4A																		
Mulberry River	1.1E+07	-009	Johnson	3H	ARK0138								4A																		
Little Mulberry Creek	1.1E+07	-012	Johnson	3H	ARK0143								4A																		
Friley Creek	1.1E+07	-912	Johnson	3H	ARK0144								4A																		
Dorcheat Bayou	1.1E+07	-026	Lafayette	1A	UWBDT01,02	x																	4A							Unknown
Dorcheat Bayou	1.1E+07	-026	Lafayette	1A	UWBDT01,02								4A								4A										Unknown
Little Bodcau Creek	1.1E+07	-010	Lafayette	1A	RED0056																4A										
Bodcau Creek	1.1E+07	-007	Lafayette	1A	RED0057																4A										
Bodcau Creek	1.1E+07	-006	Lafayette	1A	RED0027								4A		4A						4A										
Bodcau Creek	1.1E+07	-002	Lafayette	1A	e-RED0027								4A		4A					4A	4A										
Red River	1.1E+07	-007	Lafayette	1B	RED0045										4A			4A													
Red River	1.1E+07	-005	Lafayette	1B	e - RED0045													4A													
Red River	1.1E+07	-004	Lafayette	1B	e - RED0045													4A													
Red River	1.1E+07	-003	Lafayette	1B	RED0009										4A			4A													
Cache River	8020302	-031	Lawrence	4B	e - UWCHR04		x								4A														x		
Cache River	8020302	-029	Lawrence	4B	e - UWCHR04		x								4A														x		
Cache River	8020302	-028	Lawrence	4B	UWCHR04		x								4A														x		
Cache River	8020302	-027	Lawrence	4B	e - UWCHR04		x								4A														x		
Village Creek	1.1E+07	-012	Lawrence	4C	e										4A																
Village Creek	1.1E+07	-014	Lawrence	4C	UWVGC02										4A																
Strawberry River	1.1E+07	-006	Lawrence	4G	WHI0024		x								4A													x			
Strawberry River	1.1E+07	-005	Lawrence	4G	e - UWSBR03		x								4A													x			
Strawberry River	1.1E+07	-004	Lawrence	4G	e - UWSBR03		x								4A													x			
Caney Creek	1.1E+07	-015	Lawrence	4G	WHI0143Q, WHI0143R			x											4A												
Cooper Creek	1.1E+07	-003	Lawrence	4G	WHI0143S			x											4A												

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						Fish Consumption	Fisheries	Primary Contact	Secondary Contact	Domestic Water Supply	Agriculture & Industry	Dissolved Oxygen	pH	Temperature	Turbidity	Chlorides	Sulfates	Total Dissolved Solids	Pathogens	Copper	Lead	Zinc	Mercury	Other	Other	Industrial Point Source	Municipal Point Source	Surface Erosion	Agriculture	Urban Runoff	Other
Reeds' Creek	1.1E+07	-014	Lawrence	4G	UWRDC01			x											4A												
L'Anguille River	8020205	-001	Lee	5B	FRA0010		x								4A														x		
L'Anguille River	8020205	-002	Lee	5B	e - FRA0010		x								4A														x		
Oak Log Bayou	8050002	-910	Lincoln	2A	OUA0179		x								4A														x		
Oak Log Bayou	8050002	-910	Lincoln	2A	OUA0179					x	x							4A											x		
Melton's Creek	8040205	-903	Lincoln	2B	OUA0148			x											4A												Unknown
Deep Bayou	8040205	-005	Lincoln	2B	OUA0151		x								4A													x	x		Unknown
Deep Bayou	8040205	-005	Lincoln	2B	OUA0151			x											4A									x	x		Unknown
Bayou Bartholomew	8040205	-006	Lincoln	2B	OUA0033		x								4A														x		
Cross Bayou	8040205	-905	Lincoln	2B	OUA0152			x											4A												Unknown
Bayou Bartholomew	8040205	-013	Lincoln	2B	UWBYB03		x								4A														x		
Bayou Bartholomew	8040205	-013	Lincoln	2B	UWBYB03			x											4A										x		
Bayou Bartholomew	8040205	-012	Lincoln	2B	UWBYB02	x																	4A						x		Unknown
Bayou Bartholomew	8040205	-012	Lincoln	2B	UWBYB02		x								4A														x		Unknown
Jack's Bayou	8040205	-904	Lincoln	2B	OUA0150														4A												
Red River	1.1E+07	-011	Little River	1B	RED0046													4A													
Cypress Bayou	8020301	-010	Lonoke	4D	UWCPB01			x											4A												
Cypress Bayou	8020301	-011	Lonoke	4D	e - UWCPB01			x											4A												
Cypress Bayou	8020301	-012	Lonoke	4D	e - UWCPB02			x											4A												
Little Mulberry Creek	1.1E+07	-012	Madison	3H	ARK0143								4A																		
Friley Creek	1.1E+07	-912	Madison	3H	ARK0144								4A																		
Holman Creek	1.1E+07	-059	Madison	4K	WHI0070																			Nitrate		x	x				
Days Creek	1.1E+07	-003	Miller	1B	RED0004A					x														Nitrate			x				
Sulphur River	1.1E+07	-008	Miller	1B	e - RED0005									4A	4A			4A													
Sulphur River	1.1E+07	-006	Miller	1B	RED0005									4A	4A			4A													
Sulphur River	1.1E+07	-004	Miller	1B	e - RED0005									4A	4A			4A													
Sulphur River	1.1E+07	-002	Miller	1B	e - RED0005									4A	4A			4A													
Sulphur River	1.1E+07	-001	Miller	1B	e - RED0005									4A	4A			4A													
Red River	1.1E+07	-011	Miller	1B	RED0046													4A													
Red River	1.1E+07	-007	Miller	1B	RED0045										4A			4A													
Red River	1.1E+07	-005	Miller	1B	e - RED0045													4A													
Red River	1.1E+07	-004	Miller	1B	e - RED0045													4A													
Red River	1.1E+07	-003	Miller	1B	RED0009										4A			4A													
McKinney Bayou	1.1E+07	-014	Miller	1B	RED0055												4A	4A													
McKinney Bayou	1.1E+07	-012	Miller	1B	RED0054											4A	4A	4A													
Tyrnoza River	8020203	-012	Mississippi	5A	FRA0033										4A																
Big Creek	1.1E+07	-923	Nevada	1A	UWBIG01								4A								4A										
Fourche LaFave	1.1E+07	-002	Perry	3E	e	x																	4A								Unknown
Tyrnoza River	8020203	-012	Poinsett	5A	FRA0033										4A																
Tyrnoza River	8020203	-909	Poinsett	5A	e-FRA0033										4A																
Tyrnoza River	8020203	-912	Poinsett	5A	e-FRA0033										4A																
L'Anguille River	8020205	-005	Poinsett	5B	UWLGR02		x								4A														x		
L'Anguille River	8020205	-005	Poinsett	5B	UWLGR02			x											4A										x		
Rolling Fork	1.1E+07	-919	Polk	1C	RED0058																			Total Phosphorus	Nitrate	x					
Rolling Fork	1.1E+07	-927	Polk	1C	RED0030																			Total Phosphorus	Nitrate	x					
Prairie Creek	8040101	-048	Polk	2F	OUA0040										4A													x			
White Oak Creek	1.1E+07	-927	Pope	3F	ARK0053		x								4A																Unknown

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						Fish Consumption	Fisheries	Primary Contact	Secondary Contact	Domestic Water Supply	Agriculture & Industry	Dissolved Oxygen	pH	Temperature	Turbidity	Chlorides	Sulfates	Total Dissolved Solids	Pathogens	Copper	Lead	Zinc	Mercury	Other	Other	Industrial Point Source	Municipal Point Source	Surface Erosion	Agriculture	Urban Runoff	Other
Whig Creek	1.1E+07	-931	Pope	3F	ARK0067		x																	Nitrate			x				
Whig Creek	1.1E+07	-931	Pope	3F	ARK0067					x														Nitrate			x				
Cypress Bayou	8020301	-010	Prairie	4D	UWCPB01			x											4A												
Village Creek	1.1E+07	-014	Randolph	4C	UWVGC02										4A																
Poteau River near Waldron	1.1E+07	-031	Scott	3I	ARK0055		x																	Total Phosphorus		x	x				
Poteau River	1.1E+07	-001	Sebastian	3I	ARK0014		x								4A													x			
Rolling Fork	1.1E+07	-927	Sevier	1C	RED0030																			Total Phosphorus	Nitrate	x					
Strawberry River	1.1E+07	-008	Sharp	4G	e-WHI0024		x								4A													x			
Strawberry River	1.1E+07	-006	Sharp	4G	WHI0024		x								4A													x			
Caney Creek	1.1E+07	-015	Sharp	4G	WHI0143Q, WHI0143R			x											4A												
Mill Creek	1.1E+07	-016	Sharp	4G	WHI00143N			x											4A												
Reeds' Creek	1.1E+07	-014	Sharp	4G	UWRDC01			x											4A												
Blackfish Bayou	8020203	-003	St. Francis	5A	e - FRA0027		x								4A														x		
Blackfish Bayou	8020203	-005	St. Francis	5A	e - FRA0027		x								4A														x		
Blackfish Bayou	8020203	-007	St. Francis	5A	FRA0027		x								4A														x		
L'Anguille River	8020205	-002	St. Francis	5B	e - FRA0010		x								4A														x		
L'Anguille River	8020205	-003	St. Francis	5B	e - FRA0011		x								4A														x		
L'Anguille River	8020205	-004	St. Francis	5B	UWLGR01			x											4A										x		
M. Fk. Little Red	1.1E+07	-028	Stone	4E	e			x											4A												Unknown
Ouachita River	8040201	-002	Union	2D	OUA008B	x																	4A								Unknown
Ouachita River	8040201	-004	Union	2D	OUA0037	x																									Unknown
Elcc Tributary	8040201	-606	Union	2D	OUA0137A+		x																	Ammonia		x					
Elcc Tributary	8040201	-606	Union	2D	OUA0137A+					x						4A	4A	4A								x						
Flat Creek	8040201	-706	Union	2D	OUA0137C		x									4A	4A	4A														Resource Extraction
Flat Creek	8040201	-706	Union	2D	OUA0137C					x						4A	4A	4A														Resource Extraction
Salt Creek	8040201	-806	Union	2D	OUA0137D		x									4A		4A														Resource Extraction
Salt Creek	8040201	-806	Union	2D	OUA0137D					x						4A		4A														Resource Extraction
S. Fk. L. Red River	1.1E+07	-036	Van Buren	4E	e	x																	4A								Unknown
M. Fk. Little Red	1.1E+07	-028	Van Buren	4E	e			x											4A												Unknown
M. Fk. Little Red	1.1E+07	-027	Van Buren	4E	WHI0043			x											4A												Unknown
Clear Creek	1.1E+07	-029	Washington	3J	ARK0010C			x											4A												
West Fork White River	1.1E+07	-024	Washington	4K	WHI0051		x								4A													x			
White River	1.1E+07	-023	Washington	4K	WHI0052		x								4A													x			
Cypress Bayou	8020301	-010	White	4D	UWCPB01			x											4A												
Cypress Bayou	8020301	-011	White	4D	e - UWCPB01			x											4A												
Cypress Bayou	8020301	-012	White	4D	e - UWCPB02			x											4A												
Ten Mile Creek	1.1E+07	-009	White	4E	UWTMC01			x							4A				4A												
Little Red River	1.1E+07	-007	White	4E	WHI0059			x											4A												
Little Red River	1.1E+07	-008	White	4E	e - WHI0059			x											4A												
Little Red River	1.1E+07	-010	White	4E	e - WHI0059			x											4A												
Little Red River	1.1E+07	-012	White	4E	e - WHI0059			x											4A												
Overflow Creek	1.1E+07	-004	White	4E	e - UWOFC01			x											4A												
Overflow Creek	1.1E+07	-006	White	4E	UWOFC01			x											4A												
Ouachita River	8040202	-002	Union	2D	OUA008B	x																	4A								Unknown

Public Notice

Category 4a Waters: Impaired Waterbodies (Streams) With Completed TMDLs

STREAM NAME	HUC	RCH	COUNTY	PLNG SEG	MONITORING STATION	Designated Use Not Supported						Water Quality Standard Non-Attainment													SOURCE					
						Fish Consumption	Fisheries	Primary Contact	Secondary Contact	Domestic Water Supply	Agriculture & Industry	Dissolved Oxygen	pH	Temperature	Turbidity	Chlorides	Sulfates	Total Dissolved Solids	Pathogens	Copper	Lead	Zinc	Mercury	Other	Other	Industrial Point Source	Municipal Point Source	Surface Erosion	Agriculture	Urban Runoff	Other
Ouachita River	8040202	-002	Ashley	2D	OUA008B	x																	4A								Unknown
Ouachita River	8040202	-003	Bradley	2D	e	x																	4A								Unknown
Ouachita River	8040202	-003	Union	2D	e	x																	4A								Unknown
Ouachita River	8040202	-004	Union	2D	OUA0124B	x																	4A								Unknown
Ouachita River	8040202	-004	Bradley	2D	OUA0124B	x																	4A								Unknown

Public Notice
Waterbodies With Completed TMDLs
Category 4a Lakes: Impaired
Category 1b Lakes: Non-Impaired

LAKE NAME	HUC	County	Acres	ASSESSMENT	Designated Use Not Supported						SOURCE	CAUSE	TMDL DATE	Year Listed
					Fish Consumption	Fisheries	Primary Contact	Secondary Contact	Domestic Water Supply	Agriculture & Industry				
Ouachita River Oxbows below Camden	8040202	Ashley		M	4a						Unknown	Mercury	2002	2002
Felsenthal	8040202	Ashley	14,000	M	4a						Unknown	Mercury	2004	2002
Ouachita River Oxbows below Camden	8040202	Bradley		M	4a						Unknown	Mercury	2002	2002
Ouachita River Oxbows below Camden	8040202	Calhoun		M	4a						Unknown	Mercury	2002	2002
Big Johnson	8040201	Calhoun	49	M	4a						Unknown	Mercury	2004	2002
Grand	8050002	Chicot	900	M		4a					Unknown	Nutrients	2007	2004
Grays	8040204	Cleveland	36	M	4a						Unknown	Mercury	2004	2002
Columbia	11140203	Columbia	3000	M	4a						Unknown	Mercury	2002	2002
Horseshoe	8020203	Crittenden	1200	M		4a					Unknown	Nutrients	2007	2004
Monticello	8040204	Drew	1520	M	1b						Unknown	Mercury	2004	2002
Frierson	8020302	Greene	335	M		4a					Unknown	Sediment	2007	2004
Bear Creek	8020203	Lee	625	M		4a					Unknown	Nutrients	2007	2004
Cove Creek	11110202	Logan	42	M	4a						Unknown	Mercury	2002	2002
First Old River	11140201	Miller	240	M		4a					Unknown	Nutrients	2007	2004
Mallard	8020204	Mississippi	300	M		4a					Unknown	Nutrients	2007	2004
Ouachita River Oxbows below Camden	8040202	Ouachita		M	4a						Unknown	Mercury	2002	2002
Dry Fork	11110206	Perry	90	M	4a						Unknown	Mercury	2002	2002
Old Town	8020302	Phillips	900	M		4a					Unknown	Nutrients	2007	2004
Winona	8040203	Saline	715	M	4a						Unknown	Mercury	2002	2002
Ouachita River Oxbows below Camden	8040202	Union		M	4a						Unknown	Mercury	2002	2002
Felsenthal	8040202	Union	14,000	M	4a						Unknown	Mercury	2004	2002
Johnson Hole	11010014	Van Buren	26	M	4a						Unknown	Mercury	2002	2002
Nimrod	11110206	Yell	3550	M	4a						Unknown	Mercury	2002	2002
Spring	11110204	Yell	82	M	4a						Unknown	Mercury	2004	2002

Public Notice

Category 1b Waters: Non-Impaired Waterbodies (Streams) With Completed TMDLs

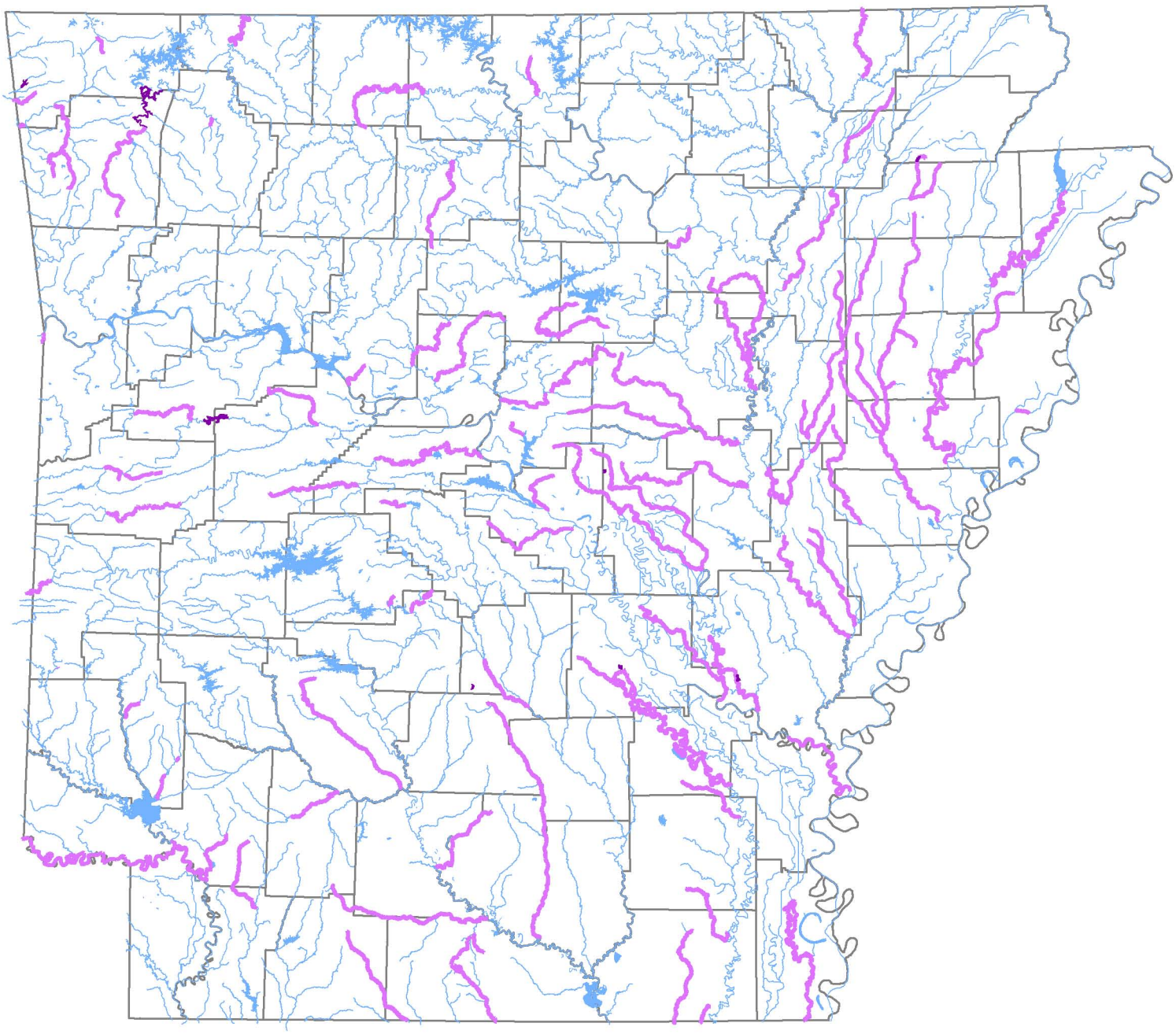
STREAM NAME	HUC	RCH	COUNTY	PLNG SEG	MONITORING STATION	Designated Use Not Supported						Water Quality Standard Non-Attainment												SOURCE					
						Fish Consumption	Fisheries	Primary Contact	Secondary Contact	Domestic Water Supply	Agriculture & Industry	Dissolved Oxygen	pH	Temperature	Turbidity	Chlorides	Sulfates	Total Dissolved Solids	Pathogens	Copper	Lead	Zinc	Mercury	Other	Industrial Point Source	Municipal Point Source	Surface Erosion	Agriculture	Urban Runoff	Other
Bayou Bartholomew	8040205	-001	Ashley	2B	OUA0013		x									1B	1B	1B										x		
North Fork River	11010006	-001	Baxter	4F	USGS							1B																		Hydropower
White River	11010003	-902	Baxter	4I	WHI0047/USGS							1B																		Hydropower
Boeuf River	8050001	-018	Chicot	2A	OUA0015A						x							1B										x		
Bayou Macon	8050002	-003	Chicot	2A	UWBYM01; UWBYM02										1B															
Bayou Macon	8050002	-006	Chicot	2A	e - UWBYM01; UWBYM02										1B															
Big Bayou	8050001	-022	Chicot	2A	OUA0032; UWBGB01										1B	1B														
Caddo River	8040102	-018	Clark	2F	OUA0023															1B		1B								Resource Extraction
Caddo River	8040102	-016	Clark	2F	OUA0023															1B		1B								Resource Extraction
Dorcheat Bayou	11140203	-022	Columbia	1A	RED0015A								1B				1B													Unknown
Dorcheat Bayou	11140203	-020	Columbia	1A	e - RED0015A								1B				1B													Unknown
Big Cornie Creek	8040206	-015	Columbia	2E	OUA0002												1B													
Little Cornie Creek	8040206	-016	Columbia	2E	e-OUA0002												1B													
Cache River	8020302	-021	Craighead	4B	e - UWCHR02										1B															
Bayou DeView	8020302	-006	Cross	4B	e - UWBDV02										1B															
L'Anguille River	8020205	-004	Cross	5B	UWLGR01		x								1B														x	
Oak Bayou	8050002	-910	Desha	2A	OUA0179					x						1B													x	
Oak Bayou	8050002	-910	Desha	2A	OUA0179						x					1B													x	
Bayou Bartholomew	8040205	-013	Desha	2B	UWBYB03		x									1B	1B	1B											x	
L. Strawberry River	11010012	-010	Fulton	4G	WHI0143H+		x								1B												x			
Big Creek	8040203	-904	Grant	2C	OUA0018		x					1B														x				
Saline River	8040203	-010	Grant	2C	OUA0026													1B												
L. Strawberry River	11010012	-010	Izard	4G	WHI0143H+		x								1B												x			
Strawberry River	11010012	-009	Izard	4G	UWSBR02		x								1B												x			
Cache River	8020302	-020	Jackson	4B	UWCHR03										1B															
Cache River	8020302	-019	Jackson	4B	e - UWCHR02										1B															
Bayou DeView	8020302	-005	Jackson	4B	e - UWBDV02										1B															
Bayou DeView	8020302	-006	Jackson	4B	e - UWBDV02										1B															
Bodcau Creek	11140205	-006	Lafayette	1A	RED0027															1B										
Red River	11140201	-007	Lafayette	1B	RED0045											1B														
Red River	11140201	-005	Lafayette	1B	e - RED0045											1B														
Red River	11140201	-004	Lafayette	1B	e - RED0045											1B														
Red River	11140201	-003	Lafayette	1B	RED0009									1B																
Oak Bayou	8050002	-910	Lincoln	2A	OUA0179					x						1B													x	
Oak Bayou	8050002	-910	Lincoln	2A	OUA0179						x					1B													x	
Bayou Bartholomew	8040205	-013	Lincoln	2B	UWBYB03		x									1B	1B	1B											x	
Red River	11140106	-025	Little River	1B	e - RED0025											1B	1B	1B												
Red River	11140106	-005	Little River	1B	RED0025											1B	1B	1B												
Red River	11140106	-003	Little River	1B	e - RED0025											1B	1B	1B												
Red River	11140106	-001	Little River	1B	e - RED0025											1B	1B	1B												
White River	11010003	-902	Marion	4I	WHI0047/USGS							1B																		Hydropower
Sulphur River	11140302	-008	Miller	1B	e - RED0005												1B													
Sulphur River	11140302	-006	Miller	1B	RED0005												1B													
Sulphur River	11140302	-004	Miller	1B	e - RED0005												1B													
Sulphur River	11140302	-002	Miller	1B	e - RED0005												1B													
Sulphur River	11140302	-001	Miller	1B	e - RED0005												1B													
Red River	11140106	-001	Miller	1B	e - RED0025											1B	1B	1B												
Red River	11140201	-007	Miller	1B	RED0045											1B														
Red River	11140201	-005	Miller	1B	e - RED0045											1B														
Red River	11140201	-004	Miller	1B	e - RED0045											1B														
Red River	11140201	-003	Miller	1B	RED0009									1B																
Cache River	8020302	-016	Monroe	4B	WHI0032										1B															

Public Notice

Category 1b Waters: Non-Impaired Waterbodies (Streams) With Completed TMDLs

STREAM NAME	HUC	RCH	COUNTY	PLNG SEG	MONITORING STATION	Designated Use Not Supported						Water Quality Standard Non-Attainment												SOURCE					
						Fish Consumption	Fisheries	Primary Contact	Secondary Contact	Domestic Water Supply	Agriculture & Industry	Dissolved Oxygen	pH	Temperature	Turbidity	Chlorides	Sulfates	Total Dissolved Solids	Pathogens	Copper	Lead	Zinc	Mercury	Other	Industrial Point Source	Municipal Point Source	Surface Erosion	Agriculture	Urban Runoff	Other
Caddo River	8040102	-019	Montgomery	2F	OUA0023															1B		1B								Resource Extraction
Caddo River, S Fk	8040201	-023	Montgomery	2F	OUA0044; A; B															1B		1B								
Caddo River	8040102	-019	Pike	2F	OUA0023															1B		1B								Resource Extraction
Caddo River	8040102	-018	Pike	2F	OUA0023															1B		1B								Resource Extraction
Cache River	8020302	-021	Poinsett	4B	e - UWCHR02										1B															
Cache River	8020302	-020	Poinsett	4B	UWCHR03										1B															
Bayou DeView	8020302	-006	Poinsett	4B	e - UWBDV02										1B															
Bayou DeView	8020302	-007	Poinsett	4B	e - UWBDV02										1B															
Whig Creek	11110203	-931	Pope	3F	ARK0067															1B										Unknown
Cache River	8020302	-017	Prairie	4B	e - UWCHR02										1B															
Cache River	8020302	-016	Prairie	4B	WHI0032										1B															
Saline River	8040203	-010	Saline	2C	OUA0026													1B												
Poteau River near Waldron	11110105	-031	Scott	3I	ARK0055		x													1B		1B		Total Phosphorus	x	x				
Strawberry River	11010012	-009	Sharp	4G	UWSBR02		x								1B												x			
L'Anguille River	8020205	-004	St. Francis	5B	UWLGR01		x								1B													x		
Big Cornie Creek	8040206	-015	Union	2E	OUA0002												1B													
Little Cornie Creek	8040206	-016	Union	2E	e-OUA0002												1B													
Little Cornie Bayou	8040206	-716	Union	2E	e-OUA0002												1B													
Little Cornie Bayou	8040206	-816	Union	2E	e-OUA0002												1B													
Walker Branch	8040206	-916	Union	2E	e-OUA0002												1B													
South Fork Little Red River	11010014	-038	Van Buren	4E	UWSRR01; UWSRR02; WHI0190														1B											
Cache River	8020302	-019	Woodruff	4B	e - UWCHR02										1B															
Cache River	8020302	-018	Woodruff	4B	UWCHR02										1B															
Cache River	8020302	-017	Woodruff	4B	e - UWCHR02										1B															
Bayou DeView	8020302	-004	Woodruff	4B	UWBDV02										1B															
Bayou DeView	8020302	-005	Woodruff	4B	e - UWBDV02										1B															

Draft 2016 303(d) list Category 5



2016 Draft Category 5 Lakes

2016 Draft Category 5 Streams

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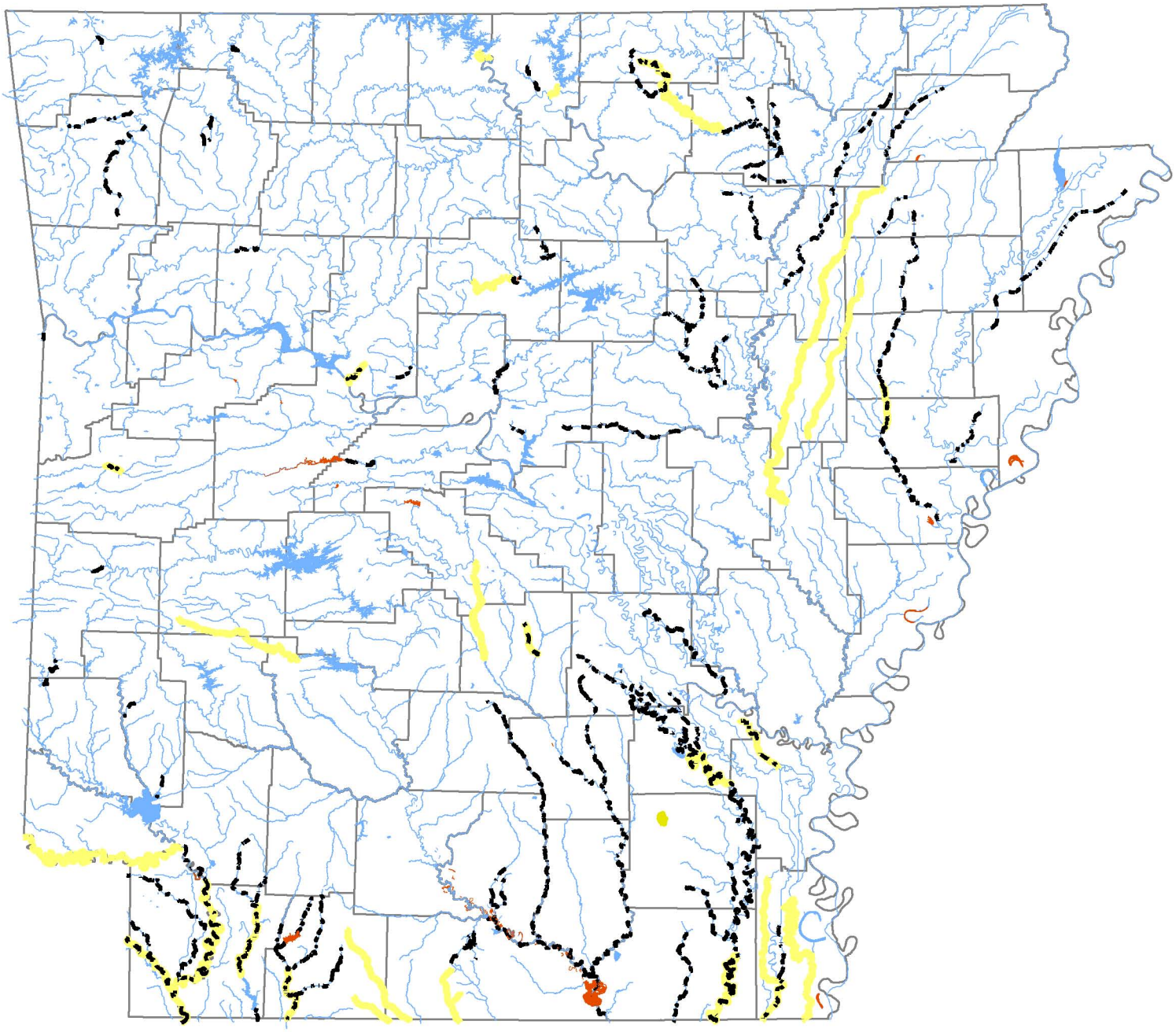
0 12.5 25 50 75 100 Miles

Draft 2016 303(d) list Category 4a & 1b



2016 Draft Category 4a - Impaired Lakes with a TMDL
2016 Draft Category 4a - Impaired Streams with a TMDL
2016 Draft Category 1b - Non-impaired Streams with a TMDL
2016 Draft Category 1b Lakes - Non-impaired Streams with a TMDL

N
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ARKANSAS DEPARTMENT OF ENVIRONMENTAL QUALITY